JUL -9 1923

BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

PROCEEDINGS OF THE SYRACUSE MEETING

1. Safeguarding Industry by Stabilizing Employment
Wilford I. King

2. The 1923 Model Sales Machine
Harry R. Wellman

3. The Planning Department As an Instrument of Executive Control
Keppele Hall

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JUNE, 1923 VOL. VIII., NO. 3

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Published by the Taylor Society at
Engineering Societies Building
29 West Thirty-ninth St.
New York

Copyrighted 1923, by the Taylor Society. Published every other month. Per Year to Members, $2.50; to others, $3.00. This Issue $.75

Entered as second-class matter, Dec. 17, 1921, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

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COMMENT

THE papers and discussions at the Syracuse meeting, printed in this issue, are testimony to the excellence of the meeting. Every paper was of a high quality and inspired discussion of a corresponding quality by an audience thoroughly representative of progressive managements. In addition to representatives of local industries there were registered 187 representatives of plants in other cities—some from as far west as Indianapolis. The reputation of the Taylor Society as offering programs packed with content both inspirational and substantial was unquestionably enhanced. Without exception the comments of members and guests who were present were highly gratifying.

WE believe the following courteous editorial in *Chemical and Metallurgical Engineering* (June 18, 1923; p. 1058) is a fair statement of the reaction of most of those who were in attendance at the meeting:

AN INTEGRATED SOCIETY CONVENTION

The recent spring meeting of the Taylor Society was one of the most enjoyable affairs of this nature that it has ever been our fortune to attend. One came away from this convention stimulated—with a feeling that something of true worth had taken place in which it was a privilege to participate. Comparing this feeling with the reactions caused by many gatherings of a like nature, one is moved to question wherein the difference lay. The usual feeling one takes away from such a meeting is of a mind in chaos, overcrowded with a heterogeneous mass of ill-digested facts.

The difference is just this, and it is one that many other technical societies could well mark: The Taylor Society's program was a unit. It was composed of different subjects—true; but each of these subjects was so chosen that it threw a searchlight beam on the main topic. By the discussion of a series of closely coordinated parts of the management problem its significance to industry was placed in a clearer and better light for all who attended.

IT is usually only in connection with Society business meetings that the Taylor Society introduces into its programs such social or quasi-social elements as banquets and luncheon meetings; the principle being that the meeting is primarily a gathering of progressive executives, interested in better management and attracted to the Society meetings as a business proposition—meetings where management substance is offered and where more new ideas concerning better management can be got within a few days than can be got in the same time elsewhere or in any other way. In this connection an interesting story was related to us during the Syracuse meeting: A young executive who had recently joined the Society had taken his program of the meeting to his general manager with the tactful suggestion that that meeting might be worth sending him to. The general manager looked the program over deliberately and thoroughly, and replied: "That is a good program; there's real stuff in it; you'd better plan to go; and look here—do you notice there isn't a d—d banquet or luncheon meeting in it; there is a society which apparently has learned something!" Members must have some time for personal business.

HOWEVER, when one can visit as well managed plants as those of the Corona Typewriter Company, and can incidentally get a ninety-mile automobile ride through country as beautiful as is Onondaga County (the rain made it only a richer green and even more beautiful!), and is served a delightful buffet lunch, and is privileged to listen to music by a real band—one is convinced that pleasure (not mere amusement) can profitably be combined with business. We wish the cards of future meetings could be so dealt as to make possible a similar element in each meeting. To the H. H. Franklin Company and the Corona Typewriter Company the Society is deeply indebted for hospitality, and for the opportunity of studying, first-hand, cases of most progressive managements and of observing the incidental mechanisms in operation. The president of the Corona Company paid the Society a high compliment when he made the theme of a brief and happy address of welcome, the idea that the plants were being complimented by being visited. But the real compliment, with respect to both visits, was to the members and guests of the Society—that their purpose should have been taken so seriously and such adequate provision have been made for profitable observation and inquiry.

ONE of the most satisfying incidents of the meeting was the reaction of the audience to Mr. King's paper on cycles and to the formal discussion of that paper by Mr. Brown and Dr. Stone. It was known of course to those who were "in the know" that the paper and formal discussions would be of the highest grade, and clear and interesting—to those interested. But there was some uncertainty as to the degree of interest which would be manifested by "practical executives" who not many years ago, were as a class little concerned with such "theoretical and high-brow" matters, as they then called them. But the interest in the cycle paper and discussion was as great—and that is saying a great deal—as was the interest in the more "practical" papers and discussions of the other sessions. Apparently the recent depression has given a new turn to the thinking of executives and a new basis for valuation of things once "practical" or "theoretical." Perhaps efforts of the Taylor Society and of the *Bulletin* have had something to do with it, as far as concerns the particular audience whose reaction we are reporting. At any rate, the members and near-members of the Taylor Society now recognize the cycle as a practical problem, and are disposed to push to the limit the inquiry how an individual enterprise can stabilize its affairs in a "wabbly" economic environment, and how by joint effort the wabble of the environment itself can perhaps be diminished. It is now recognized by the Taylor Society group of executives at least, that economical internal technical management varies directly with stability of economic conditions external to an enterprise.

AMONG the many good points in Mr. Wellman's paper which aroused the interest of his audience was this; the futility in many instances of seeking the last $100,000 required sales by pouring more money into advertising, service and other similar items of expense. The "buying of orders" is subject to the law of diminishing returns, and the time comes sooner or later when the cost of the additional increment of "bought orders" amounts to more than the profits on the increment. Therefore an enterprise may show a good record of increasing sales and at the same time may be shaping its course towards certain bankruptcy. Stimulation of orders through advertising and special service is profitable up to a certain point, but the basic resource of the wise sales administration is better management—a dependable product economically produced, thorough market analysis, careful planning of a sales campaign, better personal salesmanship by salesmen, better training and supervision of salesmen, prompt deliveries. The feature of Colonel Hall's paper which most impressed the audience was this; that whereas they had expected merely to hear about the planning department of the shop, they really were privileged to listen to a paper on a planning department for the business as a whole—a planning department serving the directors, major executive officers and sales and financial departments, as well as the factory manager. What the planning department had come to be at the Joseph & Feiss plant, under the guidance of Mr. Feiss and Colonel Hall, was a revelation.

A BOOK cannot be reviewed until it is actually published, and when the life of Frederick W. Taylor is published, which will be this fall, a review will be offered in the *Bulletin;* but we have had the privilege of examining the manuscript and are inspired to say something about it. It is, as a biography should be, the story of Taylor the man—the life story of an individual from childhood to death, the picture of a personality, of activities, successes, failures, and of the inheritance and environment which made him what he was. But there is this about the life of Taylor; while it is the story of Taylor the man, it is the story of a man who devoted his life to one single purpose, in business, in recreation, in everything—the purpose of discovering a technique of doing everything in accordance with the basic facts involved, these being ascertained by adequate observation, experiment and analysis. Therefore interwoven into the story of the individual is necessarily the story of the origin, development and nature of scientific management; and because the history of scientific management is presented as the life of a man is portrayed, we believe it will make scientific management more comprehensible than anything which has been published. Members and friends of the Taylor Society are to have a special privilege; arrangements have been made whereby about the time this *Bulletin* appears, they will be offered the opportunity of subscribing to a special edition of the life, superior in binding and stock, at the price of the later market edition.

AN INTERNATIONAL SOCIETY

IT may have been observed by the reader that the word "international" has been introduced into the explanatory sub-title of the name Taylor Society, on the cover of this issue. This has been done only after considerable thought, for the Taylor Society abhors pretense and is perhaps overcautious in what it asserts concerning its status.

What makes an organization international? Certainly not the mere assumption in the use of the word international. The fact that it is open to membership the world over? In part. The fact that it has international membership? In part also. The fact that that for which it stands is of universal import, and recognizes no international lines? In very large part.

Good management is as much a problem in one country as in another. Sound principles of management are valid in one as in another. Proved mechanisms of good management are as useful in one as in another. No more variations is required in their adaptation as between say France, Japan and the United States, than is required as between say New York, North Carolina and California.

The Taylor Society has conductd no campaign to secure membership in other countries than the United States; such membership has sought the Taylor Society. Notwithstanding the difficulty of rendering full service to those so far removed from the "seat of operations," and notwithstanding the obstacle in the rates of exchange, the membership of the Taylor Society in countries other than the United States today is as follows: France, 15; Sweden, 9; Japan, 8; Canada, 6; Switzerland, 5; Great Britain, 4; Norway, 2; Australia, China, Denmark, Germany, Italy, Java, and Uruguay, 1 each.

In each of these countries are exceptional executives, seeking all there is to be learned concerning sound management principles and proved management practice, wherever these are to be found the world over. They realize that the United States has much to offer and that the Taylor Society is a conduit through which that much may pass to them. Under all the circumstances the *Bulletin* is to them the most valuable asset the Society has to offer; through it they are able to attend our meetings, ascertain our ideas, observe our practice. In a recent issue we printed the observation of an English executive that the *Bulletin* is "quite the most progressive and instructive literature that comes to us from America." Only the other day we received an aerogram to send immediately certain issues of the *Bulletin* to a certain firm in Europe.

WASHINGTON NEWS LETTER

Washington, D. C., June 1, 1923.

"Scientific Management is that kind of management which conducts a business or affairs by standards established by facts or truths gained through systematic observation, experiment, or reasoning." Greater appreciation and recognition of the importance of facts, and then more facts, in the conducting of business enterprises is evidenced by the steady increase in the circulation of the *Monthly Survey of Current Business,* published by the Bureau of the Census. This bulletin of business activity, first published in August, 1921, had 2,956 subscribers on January 1st, 1923, and on May 1st, 3,555. It carries numerical data and index numbers on the production of nearly all basic commodities, and is steadily broadening its scope. The editor, Mr. Mortimer B. Lane, told me recently that his ideal is to build up *The Survey* until it includes not only indices of production, but also of stocks or inventories, and also of consumption. But to do that, he said, means developing a highly simplified system of reporting the salient facts by hundreds of businesses, while at the same time enlisting the support of many executives through demonstrating the usefulness of such data.

Granting that executives could more accurately plan their activities if we had more complete information on the relative rate of production to compare with similar facts regarding the relative rate of consumption, supplemented by correlated index numbers of quantities on hand, or available, in raw material, and in finished products, there still remains the problem of proving to business men in general that supplying such data to a central agency, like the Census Bureau, is not an "inquisition," and is not a further attempt at government restriction, regulation, or control. Since the war, there has been a decided reaction against any efforts to extend the arm of the government; consequently there has not been the discrimination that should be applied when opposing activities that are manifestly of a constructive or service-rendering nature.

It would seem that the Taylor Society has before it an opportunity to assist in the movement to develop an adequate national statistical service covering the trend of business movements, by its members encouraging the industries with which they are connected to participate more fully in this effort. Industries organized along Taylor lines have in their stores records, their production schedules and route sheets, etc., the basis for a monthly report requiring relatively little effort to compile. Hundreds of such reports feeding into the Census Bureau, either directly, or through the trade association of which the firm is a member, would soon permit the issuance of a summary statement, or index numbers, for a specific industry which would be a true barometer of that industry. As it is now, we know only one side of the story, namely, "production." We can only guess at stocks and consumption. Naturally we have over-production and speculation in booms, labor shortages, etc. All of which is waste which might be greatly reduced by a more comprehensive knowledge of the facts of the true demand for commodities, and the more intelligent planning of production activities to meet that demand. Those of you who agree with Colonel Babcock in his definition of scientific management should write to Mr. Lane and tie in with his effort to provide American business with really dependable barometers.

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Nearly every production manager has his vision of a plant running efficiently and to capacity the year round, and he puts in a lot of hard work trying to make that vision come true, but he finds himself checked every once in a while by a "front office" order to slow down, maybe lay off some men, and stop piling up finished product. Or, if he has been "marking time," so to speak, he is suddenly called to increase production, build up his labor force, and do all the other things that make him prematurely old. And why all this has to be is more or less of a puzzle to him. One thing that helped a lot of firms during the depression was overseas business that helped fill the valleys in the domestic sales curve. Now that the Society is interested in "distribution," as well as "production," there is a chance for the further development and application of commercial research, or market analysis, as a fundamental of better management. The Bureau of Foreign and Domestic Commerce, under Dr. Julius Klein, formerly of the Harvard School of Business Administration, is organized along commodity lines, and is prepared to furnish data regarding trade opportunities for American goods in foreign countries. Many sales managers are finding this information very helpful in building up the volume demand that keeps the whole plant humming and the production manager smiling. You can get the details of the service from Dr. Klein. All it costs you is a letter, and the answer will bring you another complete story of what your government is doing to help serve and build up American business.

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Just now "shortage of labor" is a common topic around factories and employment managers are wondering whether Judge Gary's views on immigration offer a real solution of their problems, or whether the recommendations of the Committee on the Business Cycle come closer to the ideal answer. The complete report is just off the McGraw-Hill press, and every employment manager will want to read the part on "Labor Distribution." We have a tremendous potential reservoir of labor in this country, if it were more equitably distributed and effectively utilized. We might worry less about the limitation of immigration and consider more seriously how we can make better use of existing facilities. For example, where costly hand processes can be replaced by machine processes, where better industrial relations will lessen artificial restrictions of individual productivity, where broader understanding of the mutuality of interest of employers and employees will work to increased earnings for both, wherever the application of scientific management principles will conserve capital, material, labor, and time—in all these places and ways, we have the opportunity to meet the increasing production schedules arising out of the greatest demand for consumers' goods this country has ever faced. It is easy to be "prosperous" when times are good, but such prosperity is never permanent. Prosperity to be permanent means broader understanding, and wider adoption of the great principles of industrial philosophy promulgated by Taylor. Attain to *maximum* use of available resources!

RAY M. HUDSON.

SAFEGUARDING INDUSTRY BY STABILIZING EMPLOYMENT[1]

By Willford I. King[2]

DOUBTLESS many of you will wonder that an economist should have the temerity to appear before you to discuss problems of factory employment and finance—especially when he must admit that he has had no extensive experience in hiring men and has but occasionally been inside a factory. Those of you, however, who read *Der Waldschulmeister* at college will remember how the quaint old man called attention to the difficulty of seeing the forest for the trees. Since this difficulty is a real one, perhaps I may be able to point out to you some of the more obscure characteristics of the forest even though you know infinitely more about the trees than I can ever hope to learn. Each of you understands thoroughly conditions in his own business. Our Bureau spent last year in trying to collect this knowledge from the different groups of business men, and consolidate it in order to discover the general facts pertaining to all the industries in the country, and to ascertain how these facts are related to each other.

It may be of interest to you to know something about the National Bureau of Economic Research, the Bureau which has collected the information upon which I shall base my talk to you.

This organization is comparatively new, having been founded in 1920, but it has already accomplished a considerable volume of work. The founders of the Bureau believe that it represents a new way of attacking an old problem, the problem of lessening friction between different groups in the body politic. They have observed that most acrimonious debate is based upon a disagreement as to facts, and that, as a rule, neither side is willing to accept the actual basis set forth by its opponents. The hope of the founders was that the Bureau would be able to study the chief facts at issue in important economic controversies, and present a series of findings which would be generally accepted. They believed that such an agreement as to the facts would allay, to no small degree, the friction too often existing between the two great economic groups, namely, employers and employees.

The aim of the Bureau, then, is very much like that of certain physicists of the present day—that is, to produce more light with less heat. The device utilized for the purpose of securing general acceptance of the Bureau's findings is unique. It is to have all of the reports ratified by a Board of Directors composed of representatives of the chief classes in the present industrial order. In general, at the present time, our Board may be thought of as consisting of three groups representing, respectively, Science, Capital, and Labor, though the division is by no means clear-cut, for practically all of the members of the Board are scientific in their outlook. I may say that this novel device has thus far met with surprising success, for no friction has developed within the Board, in spite of the fact that it contains socialists, labor unionists, and representatives of "big business;" and the estimates made by the Bureau have thus far been almost unanimously accepted as being earnest and unbiased attempts to arrive at the facts.

A little more than a year ago, the Bureau was asked by Secretary Hoover to prepare for President Harding's Conference on Unemployment, a statistical report showing the facts concerning cyclical unemployment, and in addition describing the various measures which have been suggested for its relief. Since this investigation fitted in very well with the inquiry already made by the Bureau concerning the income of the people of the United States, and since the Bureau was planning to engage in a study of the business cycle, we were, of course, glad of the opportunity to aid in this work.

My particular part in the investigation was to discover as fully as possible the facts concerning unemployment during the 1921 depression, and to ascertain how labor conditions were affected at that time. The purpose of the President's Conference was to discover remedies for unemployment, hence one would naturally suppose that I would have devoted my first efforts to measuring the extent of unemployment. As a matter of fact, however, it is impossible to measure unemployment unless one is to class as unemployed all persons who are not at work. The common desire is to measure only *voluntary* unemployment, but it is entirely impossible to say how much employment is *voluntary* and how much *involuntary*. An example or two will suffice to verify this statement.

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[1] Paper presented at a meeting of the Taylor Society, Syracuse, N. Y., June 7, 1923.

[2] Bureau of Economic Research, New York.

A woman has been working in a mill. She stops work because she needs a rest. She is not sure whether she will return to work later or not. Shall she be classed as unemployed?

A man falls ill. Is he to be called unemployed? Suppose that for five years he continues sick. Is he still one of the unemployed? Suppose that his chief trouble is old age. Do you still class him in the same manner? If not, what age limit will you fix? Will it be the same for the rugged veteran and the feeble weakling? Suppose that a man is able bodied and will work for his usual wage of ten dollars a day but not for eight, is his unemployment voluntary or involuntary?

A study of these difficulties seems to prove that the only solution is to cut the Gordian knot, and measure *changes* in employment. This task in itself is difficult enough. The inquiry which we conducted was designed to answer a number of specific queries about the employment situation.

First, we wanted to know whether or not there really had been much falling off in employment. The fact was pointed out to us that bread lines were not in evidence and that there was little to show much suffering on the part of the working class. Was it not possible, then, that the supposition that there were five million idle men, arose merely from the fact that there had been a great shifting in workers from manufacturing, mining, and transportation into other industries for which no records were available—for example, into agriculture and trade? Another way of putting the problem is this: Were the figures at hand showing a decline of employment in the manufacturing industry typical of what was happening in all industries, and did they mark a huge volume of idleness, or were they simply records of a shift of workers from one industrial field to another?

Another question which we sought to answer was whether the decline in the number of employees measured with a fair degree of accuracy the total shrinkage in employment, or whether there was a large additional amount of idleness which arose from placing great numbers of employees upon a part-time basis during the period of dull business.

To secure answers to these queries was by no means an easy task. Numerous lines of attack were tested, some of them with discouraging results, but eventually it was found that by appealing directly to the employers of the country, a sufficient body of information could be obtained to give satisfactory answers to practically every question upon which information was sought. Records were received from employers in all important industries, the reports covering in the aggregate nearly 10 per cent of the employees of the United States. When the results thus obtained were tabulated, the following facts were revealed.

First, the depression of 1921 did bring about a tremendous decline in employment, for, as a matter of fact, relatively few workers shifted from one industry to another. Falling off in employment was, however, confined mainly to the construction, manufacturing, mining, and transportation industries. In other fields, the depression apparently caused but little change in the total number at work.

About one-seventh of all the workers of the country were idle during the dullest part of 1921. Most of those at work put in full-time, but there were a sufficient number of part-time workers to reduce the total number of employee-hours worked by about one-sixth. When you think of what it means to have one-sixth of the time of all employees in the country lost, you can readily see that the problem dealt with was one of the first magnitude.

The tabulation of the figures led to one discovery which was wholly unexpected—namely, that the tendency to lay off employees was much stronger in large enterprises than in small ones. At the lowest period of the cycle, concerns employing fewer than twenty-one employees had reduced their total labor force by only 3 per cent, while firms hiring from twenty-one to one hundred employees had lessened the number of hours worked by nearly 14 per cent, and enterprises hiring over one hundred employees had cut down their volume of employment by more than 28 per cent. It thus appears that, in the depression of 1921, the man who worked for a large concern was nine times as likely to lose his job as was the man working for a very small enterprise.

This finding is quite the opposite of what many writers have reasoned ought to be the case; in fact it has been freely asserted that with the better organization resulting from the advent of large-scale industry, the stabilization of employment would automatically come about. After seeing these figures, however, we wonder whether the reverse is not true. Since unemployment is the outstanding and all-embracing feature of the business cycle, what characterizes it apparently must characterize the cycle in general. What is the reason that we do not read of frequently recurring depressions, crises, and panics in the history of centuries past? Is it because big business was in those days wholly non-existent? It is possible, of course, that the 1921 depression was abnormal, and that in the depressions of the years to come, it will be the large firms and not the small ones that will give steady work to their helpers. If the 1921 depression followed the normal course, and if the largest enterprises do give the least regular employment, the economic basis underlying this state of affairs is certainly one deserving most careful attention. We must find the answer to this question: Why is the enterprise having fewer than twenty-one employees able to keep them practically all at work when its larger rival is laying off its workers?

Unfortunately, it is impossible as yet to give a categorical reply to this query. Perhaps the small concern has the advantage because it is in the most intimate contact with the ultimate consumers of its goods. If my hypothesis considering the causes underlying the business cycle is correct, this relationship is presumably one of the greatest moment.

Our Bureau has never formed any theory of the business cycle, hence if I state my analysis of the causes of this phenomenon, you must remember that I am speaking for myself alone, and that my views may be very different from those of the Directors of our Bureau, or the other members of the Research Staff. I shall, nevertheless, enumerate at this point the sequence of events which it seems probable to me characterizes the business cycle.

Just at present, we are near the crest of a typical boom in business. Retailers have found sales good during the past few months. Their profits have been materially enhanced by the fact that the price level has been rising, and hence their wares have tended to grow in value while on the shelves. The increasing cost of goods has so forced itself upon the attention of the retailer that he now feels the necessity of stocking up before prices go higher. As a result, he is buying vigorously and increasing his stocks on hand. The more rapidly he buys the harder it becomes for him to get his orders filled promptly. As deliveries become bad, his natural tendency is to place orders for more goods than he expects to actually get.

This, of course, makes it harder than ever for the manufacturer to keep up with his orders. The manufacturer feels, however, that business is extremely good, and that he can go ahead without fear of difficulty because he has orders on hand. Under these circumstances, he of course puts on as much pressure as possible in an effort to turn out products with maximum speed. This process leads to a snowballing effect. Prices rise more and more rapidly, and it becomes increasingly difficult to get goods. Some day, however, the consumers will conclude that prices are too high, and we shall have buyer's strikes of various kinds similar to the one witnessed recently in the sugar industry. As these buyer's strikes spread, whether silently or with much noise, the retailer will discover that his goods are not moving from his shelves at the rate which he had counted upon. Then he will become panicky, and his natural tendency will be to cancel the orders which he has already placed. As he cancels orders, the wholesaler and the jobber will necessarily try to follow suit, and the manufacturer will be the one who suffers from the process. Factory prices will collapse, and the manufacturer will find that he is able to sell his finished products for only a fraction of the price that he expected to get for them. Many of the goods which he was manufacturing to fill orders received will remain on his hands. He will be overstocked with raw materials that he bought at high prices. He will have large loans falling due which would have been easy enough to pay off had prices held up, but which it will be next to impossible to meet under the new price conditions.

Strangely enough, during all this time, retail prices will still be holding up to relatively high levels, for the retailer's custom is to sell his goods at a certain percentage over cost price with little regard to current price at wholesale. This tendency for retail prices to remain high after factory prices have fallen sharply has long deceived economists, and has led them to believe that the force causing the decline in prices must originate in the factory. As a matter of fact, the truth seems to be that *the initial impetus comes from the consumer* when he fails to buy the expected quantity of goods from the retailer.

Once factory prices have reached bottom, there ensues a considerable period of liquidation characterized by many failures and large amounts of "frozen credit" at the banks. During this period, retail prices steadily fall, retail purchases are extremely low, but the physical volume of sales by retailers remains at a relatively high level. This fact is one of the interesting things brought out by the recent investigations made by the Federal Reserve banks. Their studies show that during both good times and bad, the total dollar value of sales of retail stores tends to remain approximately a fixed quantity. This being true, it necessarily follows that as retail prices fall, the physical volume of sales must grow larger.

Since, during the depression, retailers buy little and sell much, their stocks eventually must become depleted, and a time will arrive when they will be compelled again to enter the market for goods. The wholesalers will pass the orders along to the jobbers and manufacturers, soon the factories will again be humming, and business will once more resume its upward course. In about three and one-half years from the crest of the first boom, we shall not only have passed down into the trough, but shall have again climbed the next hill to the top.

So much for the way the cycle works; What are its chief effects? When the depression hits the factory, and the prices of finished products fall, it becomes imperative for the manufacturer to reduce costs if he is to keep his plant in operation. Wage earners, of course, do not take kindly to wage cuts, hence the usual solution is to lay off a large percentage of the working force, and to put some of the other employees upon part time. During the 1921 depression, this process continued until it reduced the total volume of factory employment by 30 per cent. and, in factories turning out metals and metal products, the reduction was slightly over one-half. Now when the manufacturer lays off his workers he reduces his expenses, but he still loses money because of his overhead costs. To compensate him for this loss, he usually has large profits piled up during the boom. But how about the employee? When he is out of a job, his expenses are not reduced, but his income is entirely cut off. Furthermore, his gains from larger wages during the boom period were as a rule proportionately less than were the extra profits of his employer.

As you understand, our Bureau takes no position on any policy, and I can speak for no one but myself, but I am one of those who believe that the idea of profit-sharing is entirely contrary to the interests of the employee. It seems to me that the employer is the one who should bear the brunt of the depression, and that he should therefore be entitled to the gains acquired during the boom. I see no prospect of gain and every prospect of loss if the workers obtain a controlling voice in the direction of industry; but if you agree with me in these ideas, I hope that you will also agree with me that the worker has a legitimate right to demand that a system shall be worked out which will enable him to be employed steadily as long as he renders satisfactory service. Whiting Williams, who recently spent much time among the ordinary laboring classes, studying their psychology, shows that *the thing which they most want is a guarantee of a steady job.* Regular work at steady wages, even though the wages are not as high as are now paid in boom times, seems to me the best insurance against Bolshevistic tendencies among the working classes.

To my mind, then, it is the duty of all good citizens to cooperate in furthering to as great an extent as possible the idea of making employment stable from month to month, and from year to year. The employer will, in the long run, gain as much as anyone by such a stabilization, and he occupies a strategic position which he should utilize to the best of his ability to bring about this desired end.

Sound economic policy does not demand that we give men unemployment insurance while they stand idle and produce nothing, does not ask that we transfer them from their homes to do government work in some out of the way locality, but rather that we keep them steadily engaged at their regular tasks. The employer, however, can hire men only when he has work to be done. His problem, then, is that of stabilizing his output. He must prepare not only for the short year of twelve months, but also for the long year of the business cycle, a year which averages some forty months in length. Is there any practical way of attaining such an end?

As I said at the beginning, I am far from posing as an expert in the manufacturing field, but I wish to make certain suggestions which I believe many of you may be able to apply with modifications to your own specific enterprises.

It seems to me that now during the boom is the time to be conservative. Raise wages as little as possible thus avoiding the necessity of severe wage cuts at a later date; adopt a hand-to-mouth policy in buying raw materials; scrutinize carefully all orders from your customers; go slow in accepting orders from men whose credit is not of the best; see that all contracts are definite so that the chance for cancellation is reduced to a minimum; postpone building those additions to your plant which seem so necessary; make the old machinery do a little while longer; reduce your stocks of finished products to a minimum; and, above all—accumulate cash. Sell all but the most gilt-edged securities; dispose of any unnecessary assets; and strengthen your cash position at all costs!

I realize that most of you will say that this is the impractical advice of a theorist; that you will lose customers, that you will sacrifice your chances for profits; and I will agree that these things will happen—but I am not sure that two years from now the advice will seem as visionary as it does today.

Many optimists tell us that business has now reached a high plane, and that you may look for it to remain on this level for several years to come. I fear that they merely typify those happy-go-lucky people who sing and dance during the summer, forgetting the long winter ahead. The chances are that by late 1924 or early 1925 business will again be very dull, orders few, and prices discouragingly low. Now is the time to plan for the depression ahead, for if you do not plan now, you will not be ready for it when it comes. Study the statistics of your own business to see what the long time trends are, and plan now the buildings which you will need, the new machinery which you will require to take care of the normal growth of your enterprises. Arrange to construct these during the depression when labor and material costs are low. Remember that after the depression will come another boom, and that, during this next boom, you will again have difficulty in making goods fast enough to fill orders as they come in. Plan now to make goods for stock during the lean months while materials are cheap. Arrange also a campaign for securing orders well in advance. I am told by those who have had experience, that this can be successfully accomplished by giving attractive discounts and guaranteeing prompt delivery. If you go into a depression with small stocks on hand, you will not find that the accumulation of stock manufactured during the dull times will so greatly overload your warehouses. With an abundance of ready cash on hand—the cash which you have saved during the boom—you will be able to take advantage of bargain prices in materials. A few manufacturers have demonstrated that by such careful long-time planning, and by conservative action during the boom, they are able to guarantee steady work to all their employees who care to remain on the job. If you have not raised wages much during the boom, you will not need to cut wages much when hard times appear. If during the dull times you have manufactured quantities of goods for stock, it will not be necessary to hire many additional workers for the next boom, and hence you will have little occasion to pay fancy wages in order to fill your orders.

I may be unduly optimistic, but I believe that if you will study the business cycle thoroughly until you know the position that you occupy in it at every time, and if you understand the relation of the activities of your own particular business to the cyclical fluctuations of industry in general, you will be able to approach, if not attain stability in operations from year to year. Knowledge is power, and a thorough realization of the future will prevent you from succumbing to waves of optimism or pessimism as they sweep over the country.

The idea of stabilization appears to me to be a practical application of the Golden Rule, and one which will in the long run not only bring prosperity and contentment to your employees, but will also make your enterprise a safer investment for bondholders and stockholders as well.

DISCUSSION

Carleton F. Brown:[1] The more one considers the various points brought out in Mr. King's excellent paper, the more one is impressed with the vital importance of this subject to every man, woman and child in this country, and indeed for that matter throughout the world.

If I may be permitted a criticism of the paper, it is that the title does not really represent the true scope of the subject. It is undoubtedly true that one of the greatest difficulties which the business cycle presents is that of employment, and it is quite right and proper, therefore, that Mr. King should have made this phase of the problem the principal subject for discussion, but the paper goes so much farther in its presentation of theories of the business cycle and its conclusions with respect thereto, that one is tempted into all manner of speculative thoughts having no primary connection with the problem of employment. To discuss Mr. King's paper in any great detail or to attempt to cover it fully would, I fear, result in the child being larger than the parent. I will, therefore, confine my remarks to one or two thoughts, which perhaps may be considered somewhat as off-shoots from the thoughts expressed in the paper but nevertheless particularly germane to the subject.

Modern industrial methods, while having brought with them benefits of incalculable value to the human race, have at the same time raised new problems of paramount importance, the proper ethical and economic settlement of which in one way or another must be achieved.

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Among other things the very size of the modern corporation has forced upon the leaders of industry an appreciation of the necessity for the proper and systematic planning of all operations of their business, the formulation of such plans being determined by such facts and data as seem pertinent. In the various plans which have to be considered, not the least important is that of planning for production. Every plant, whether it be large or small, must of necessity make production plans of some sort whether the mechanism be simple or complex, and the fundamental and ultimate object sought is the reduction of costs with a consequent increase in profits.

The question arises, therefore, whether it would promote more precise and economical technical management in our plants if cyclic fluctuations could be materially reduced? Most manufacturers are confronted with the problem of the seasonal cycle, which in many respects may be likened to the business cycle, except that it may be more precisely measured both as to duration and movement. Not all types of enterprise, however, are affected in the same degree, the canning industry perhaps representing one extreme and the office appliance industry the other. In any given plant the desire of management, whether possible of accomplishment or not, is that, for the attainment of ideal results, production should proceed on a uniform basis. If production requirements for a given period, say a year, can be given to plant management, it will be their endeavor to provide for that production on this basis or as nearly so as circumstances will permit. Violent fluctuations will be avoided. If they can adjust their plans so that uniformity of production results, they will attain maximum efficiency with minimum expense. If, however, they are forced to continually adjust their production plans to meet sales increases or decreases, inefficiency and high expense must necessarily follow.

Now is it not reasonable to assume that if uniformity of production is to be desired in the seasonal cycle, such uniformity is also desirable in the business cycle? When we determine upon a carefully thought out production campaign for the year based upon well calculated sales analyses, we can be reasonably sure of the approximate attainment of our objectives, since the period is relatively short and results can be more readily forecasted. The broad swings of the business cycle, however, present difficulties which are either absent for the time in the seasonal cycle, or else are so close as to be readily apparent and therefore easily weighed in their influence on conditions.

Laying aside for the moment any discussion of the possibilities of forecasting the extent of the business cycle and providing for the conditions which may arise therein, let us assume that we can determine with the same degree of accuracy the volume of sales throughout the period of the large cycle that we can in the period of the small one. In such a case may it not be possible to lay down a production program which, while perhaps not maintaining the degrees of uniformity possible in the smaller cycle, would none the less avoid the extreme heights of production in periods of prosperity as well as the extreme depths in periods of depression?

As has been stated by the speaker, the worker desires steady employment, and it is certainly to the advantage of the manufacturer to bend every effort towards this end. With uniformity of production and employment, a planning department is able to gauge with maximum accuracy the production possibilities, not only of the plant as a whole but of the various departments of that plant and even of individuals. With such conditions of uniformity, it is readily observable that among the benefits derived may be found the following:

1. Minimum labor turnover.
2. Minimum personnel for certain activities, such as for instance, employment or industrial relations, instruction, planning and to a certain extent supervision.
3. Maximum output per productive hour with a consequent minimum plant investment.
4. The attainment of a more precise control of the flow of goods in production with a consequent maintenance of minimum inventories.
5. Retention on the pay roll of specially trained or highly skilled minor executives, who in periods of depression might be dispensed with, only to be later replaced when the upward swing of the cycle sets in.

Now if we admit that it would promote more precise and economic management if we could materially reduce cyclic fluctuations, we are then confronted with the problem as to whether or not there are probable ways in which the management of enterprises, acting either individually or collectively, can accomplish the desired results. Seeing controversial breakers ahead, I am tempted to say, "There are," and let it go at that; but I do wish to give brief support to Mr. King's contention on this point. For example, there are to be found conspicuous examples of firms which, first having solved some of the problems of seasonal fluctuations of production, have then gone on and extended the scope of their plans to the solution of the problem of cyclic fluctuations with notable success.

I am deeply impressed with Mr. King's suggestions, which are pertinent and well worthy of very serious consideration on the part of all manufacturers. They do not, nor do I think that it is his idea that they are intended to, present a complete solution of the problem of cyclic fluctuations, but they are nevertheless important factors therein.

Not every firm or industry will be able to utilize the methods of other firms or industries. Major principals, however, can or should be more or less readily established from which each organization may build the plan best adapted to its particular requirements. For instance, industry as a whole may be divided into two general classes; that which produces goods for consumption directly by the ultimate purchaser, and that which produces material for fabrication by other manufacturers before passing into the hands of the ultimate purchaser. In the former case the manufacturer is immediately dependent upon public buying, and is in a position to gauge for himself the extent of the demand and plan accordingly; whereas in the latter case the manufacturer is dependent upon the correct judgment and the careful planning of many different manufacturers who may or may not gauge the demand with any degree of accuracy. Each class, therefore, must establish policies best adapted to the conditions under which it operates, and within these classes there are of course many sub-classes which likewise will vary their plans according to the circumstances. There is this thought to be borne in mind; that any steps tending to eliminate the extremes of cyclic movements in any given concern by the same token adds its bit to the reduction of cyclic swings as a whole, through the more regular employment of its labor.

It is not my intention, nor do I feel competent to suggest the various means by which cyclic fluctuations may be reduced. Obviously, regular employment would be one of the factors tending towards this end, but it would be an act of supererogation, I believe, to further amplify the excellent suggestions made by Mr. King. There is, however, one striking point brought out in the paper to which I should like to call attention. He says, "the recent investigations of the Federal Reserve Banks show that both during good times and bad the total value of sales of retail stores tends to remain approximately a fixed quantity, and that this being true it necessarily follows that as retail prices fall, the physical volume of sales must grow larger." Thus, for example, in a recent investigation it was found that of 159 department stores reporting, the index numbers of their sales were 117.7 for 1920, and 111.5 for 1921, sales for 1919 having an index number of 100. From the standpoint of the manufacturer, this would represent a very slight fluctuation over a period of three years. Does this not suggest at once the thought that in many lines at least, sales and fiscal policies might be so planned as to more nearly equalize production and demand, and if the same volume of sales would result under such a system of equalization throughout the cycle, would not the profits of the company so planning be greater, and would not the condition of that company from every standpoint be better at the conclusion of the cycle than if it had followed the more tempting path of "making hay while the sun shines"? During periods of prosperity, when customers are clamoring for goods and competitors are driving their production departments to the utmost—possibly building additions to their plants in order to get a still greater volume of business—the temptation to rush in and seize every possible bit of business, with a glorious disregard of consequences, is apt to be well-nigh irresistible. Stockholders are anticipating substantial dividends after the lean years. Every influence tempts us onward to pile profits upon profits. We realize dimly that some day must come a recession, but as the wish is father to the thought, we think that that day will be long delayed and that when it comes we shall in some way, not at all clear, extricate ourselves from the difficulties which have beset us under similar circumstances in the past.

Bearing in mind the specific suggestions contained in the paper, it would seem that the following thoughts may be used as a foundation upon which to build the planning structure:

1. Know the theory of the cycle.
2. Study general business conditions and the details of your own particular business in comparison therewith.
3. Know at all times your position in the general cycle and your cycle.
4. Formulate definite sales, production and financial policies.
5. Above all have the will to resist in periods of prosperity the siren lure of large sales and big profits obtained at the expense of the future of your business, and the courage to plan and execute for the future when in the depths of depression. The *will to resist* in time of prosperity; the *courage to plan and act* in time of depression!

N. I. STONE:[1] In July, 1921, the magazine *Factory* inaugurated a discussion of the business cycle in its relation to individual plant management by publishing an article entitled "Can We Smooth Out The Business Curve"? Unlike our speaker of today, who speaks from the viewpoint of an economist, the author of that article, a practical plant manager, looked at the problem entirely from the angle of the man in charge of an individual business. While he analyzed the phenomena of the business cycle with its spurts of feverish activity succeeded by periods of paralyzing stagnation with admirable clearness, his conclusions bore the marks of obvious limitations which come from too narrow an outlook. Perhaps if Dr. King had read that article he would not feel it necessary to apologize as he has today for the temerity of a theoretical economist in discussing this subject before a body of practical engineers.

The conclusions of the practical engineer who wrote the article I am referring to are well epitomized in the following two sentences which I quote verbatim:

> "Good times and bad times are not wholly due to financial or psychological or any other phenomena, but to the aggregate of good or bad management in individual businesses. If enough businesses were well managed all the time, we should never have a depression."

Having been asked by the editor of *Factory* along with a number of others to discuss the article in question, I took issue with that conclusion. I felt then, as I do now, that the phenomena of the business cycle have their roots in the deeper foundations underlying the economic structure of our present order of society, and are practically beyond the reach of the engineer dealing with the technical problems of the individual plant. Not that I fail to appreciate the need of and the advantage which comes from efficient management. There is no question that no manufacturing enterprise can be too efficient. We need all the efficiency and all the aid which the technical engineer can bring to the individual plant. Nor can there be any question as to which of the industrial enterprises have the better chance of surviving an industrial depression; those managed efficiently or those poorly managed. But while giving the engineer full credit for all he can do for an industrial enterprise in strengthening its position as against its competitors in the same field, I maintain, contrary to the assertion of the author of the *Factory* article, that if all industrial plants were run with the highest efficiency of which skilled engineering is capable, there would still be industrial depressions succeeded by booms so long as the general economic conditions which cause these distinctly modern phenomena continue to prevail.

What are these economic forces which distinguish our present industrial order from those of other historical epochs? Obviously, I have not the time to go into this fully. Dr. King has already touched upon the subject. Perhaps I can supplement what he said by calling attention to one outstanding feature which distinguishes the present industrial order from all its predecessors and which is perhaps more responsible for the modern phenomenon of recurring business cycles than any other single economic factor. It is this:

Modern industry is built on *credit* and is constantly at work creating a supply in anticipation of *future demand;* under the precapitalistic industrial systems, the producer always worked for the customer whom he knew personally; supply *followed* demand, and transactions were based on *cash* payment or on exchange of goods, but not on credit. The craftsman of old was satisfied with the trade which came to him from his customers, with whom he was in personal contact; when his apprentices grew to be journeyman mechanics they left him one by one to set up in business for themselves; in other words production continued on a small scale and there was no impelling force to drive the producing craftsman to build up a larger and larger business. The advent of the steam engine and mechanically propelled machinery produced a revolution in the industrial order. It made for growth of the industrial unit. It brought about standardization of products, which in turn made possible working ahead of the demand. This brought two forces in its train unknown before; the element of speculation in business and the necessity of doing business on credit.

Freed with the aid of credit from the shackles imposed by the limitations of its own capital resources, forced by competition to seek constantly for new and expanding fields and lured by the law of increasing returns and diminishing costs as production is carried on an increasing scale, modern industry leaped forth in a manner that was not dreamed of before these modern forces had come into play. It was inevitable that under these circumstances productive capacity should soon outstrip the demand and that we should get periodic gluts in industry after industry as they expand in obedience to the newly released economic forces. There is no escape from the operation of economic law for any concern that wants to play the modern industrial game. Engineering efficiency will sharpen the weapon of the individual concern for the competitive struggle and will enable it to survive at the expense of its less efficient rivals when the next industrial cyclone with its inevitable depression of prices wipes out those whose costs of production make it impossible for them to survive. But if every manufacturing concern were on an equal plane of industrial efficiency, it would not prevent the recurrence of the business cycle so long as there is no central authority to gauge demand and to keep the production of an entire industry down to that demand; so long as each individual concern is free to enlarge its output without regard to the output of the rivals and is under constant pressure to do so under the workings of competition and of the economic law of increasing returns. In fact, if all were equally efficient, it would only serve to hasten the rate of growth at which production (supply) outstrips consumption (demand) under the capitalist order. In the hypothetical case of equally efficient industrial units, victory would be with those best equipped financially to weather the storm.

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Technical Management and the Cycle

With these facts as a background, I shall try to answer the two questions assigned to me for discussion. 1. Would it promote more precise and economical technical management in our plants if cyclic fluctuations could be materially reduced? 2. Are there probable ways in which the managements of enterprises acting either individually or collectively can reduce cyclic fluctuations?

Answering the first question. The recurrence of business cycles is one of the worst, if not the worst, disturbers of managerial plans for the orderly and economic operation of industrial plants. Efficient plant operation above all requires regularity in the repetitive processes of industry. This regularity is widely upset by the intrusion of outside economic forces having nothing to do with internal plant management and over which the plant engineer has no control. Plant organizations, including specialists of high degree, skilled mechanics trained and disciplined through years of hard work in the special processes developed in the particular plant, plant morale built up through the laborious effort of the employment manager, an esprit de corps developed among the staff of executives and foremen, all are swept away almost over night through the necessity of shutting down the plant dictated by the sudden cessation of orders and the drying up of bank credit.

When plant operations are resumed after the storm is over, most of the work of the plant managers must be done over again with a newly rebuilt organization. Even the work of unskilled labor suffers under the circumstances, for there is hardly any labor, no matter how low the degree of skill, that does not gain in efficiency through acquaintance with and adaptation to the conditions of each plant, and it therefore takes time to "tune up" a plant to a performance somewhere near 100 per cent of its capacity.

Can Management Help Reduce Cyclic Fluctuations?

Granted that business cycles are caused by general economic causes, it follows that they can be dealt with effectively only through counteracting forces of a similar nature. If the big force in modern business is credit, it is obvious that control of credit with the business cycle in mind is pregnant with great possibilities. As long as credit was dispensed by individual banks to individual customers solely from the point of view of day-to-day requirements of those customers on the one hand and their financial reliability on the other, the credit instrumentality was as much a blind force in the operation of the business cycle as the manufacturing unit itself. But with the creation of the Federal Reserve Board and the pooling of all the cash and credit resources into one national pool, the possibilities of a unified control of credit on a national scale from the broad viewpoint of the best national interests and from the long range view of the business cycle, rather than the short range view of immediate prospects and orders on hand, are well-nigh limitless.

Those who were privileged to hear Prof. Friday's address at the New York meeting of this Society some two or three years ago, may recall his brilliant scheme for insuring continuity of production through the instrumentality of some such national agency as the Federal Reserve Board. Without entering into consideration of his ambitious and far-reaching scheme, it is obvious that this is the one agency in the country which today is in the possession of more complete information as to the business activities of the country than any other institution. With that information at hand, it is in a position to tell when the industrial activities of the country have reached a point of saturation beyond which farther extension means only competition for existing supplies of material and labor, which can only lead to artificial price inflation with the inevitable collapse in the end. A word of warning from the Federal Reserve Board at this point, coupled with the refusal to discount commercial paper given for financing additional business, can put more powerful brakes upon the overspeeding engine of industry than any other single force. By doing so, the Board would arrest the upward flight of the cyclical curve and thereby reduce the extent of the subsequent fall. Conversely, through its knowledge of the extent to which the depletion of stocks on hand has gone on, and from its commanding position of control of the national cash and credit resources, the Federal Reserve Board would be in a position of encouraging the resumption of industrial activities at a much earlier stage than has been possible for individual banks and individual business enterprises in the past, with the limitations upon their knowledge of national conditions and upon their individual resources. In other words, the cycle curve would be more or less flattened out.

Next to the control of credit are the public works operations of the national, state, county and municipal governments. Much of this building has to be done from year to year to satisfy current needs, but a large part of it could be deferred from time to time. If the Congress, the state legislatures, county boards and municipal councils could be induced to adopt a decennial, or at least a quinquennial budget for public works instead of the annual appropriations now in vogue, and if the executive authorities were entrusted with the power to expend these appropriations over the five or ten year periods, reducing building operations to a minimum when business is booming and there is a scarcity of labor and materials, and spending the accumulated reserves in years of depression when private business is at a standstill and there are ample supplies of labor and materials at reasonable prices, apart from the enormous savings this would result in for the people at large, such a practice would furnish another important factor in still further flattening the curve of the business cycle.

We are now in a position to answer the second question as to ways in which management of enterprises can reduce cyclic fluctuations. It can do so by seconding the efforts of the government authorities by doing certain work in slack times rather than in busy times as has been practiced until now. To do so requires almost a complete reversal of policy on the part of the higher business executives. What from a short-range point of view seemed the acme of conservatism and sound business policy, becomes shortsighted and suicidal from the long-range view of the business cycle.

An illustration will make this clear. When business falls off or only tends to fall off, the usual advice of the banker or the policy of the conservative chairman of a board of directors is to reduce the overhead. Executives of long experience, even though of minor standing, are unceremoniously dismissed, the selling force is greatly curtailed, the advertising appropriation is cut down and everything in the nature of an overhead expense is cut to the bone. This is pointed to "with pride" in the report to the stockholders as evidence of sound management.

Not so long ago, Mr. Henry S. Dennison, President of the Dennison Manufacturing Company, surprised audiences of economists and of business men by telling them of the success attained by his company by following a policy which the old-fashioned banker and business man would call reckless. When business was booming in 1919 and in the early part of 1920, the Dennison Manufacturing Company allowed its selling force to become greatly depleted by failing to fill vacancies created by resignations and discharges. When Mr. Dennison saw the signs of the approaching storm of 1920, he began preparations for meeting the coming emergency, not by cutting down the force still further, but by practically doubling it, in order to be in a position to make the increased selling effort which bad times require. Instead of curtailing his advertising appropriation, he spent more money than ever when the depression set in. Instead of "trimming his sails," he put new products on the market when old ones did not sell as well as before. Instead of being liberal with credit in boom times and curtailing it to the limit in hard times, he reversed the process and thereby flattened the cycle curve of his own business to an extent that seems almost unbelievable.

Not every business can work to stock, but where the product lends itself to such purpose and the financial and credit resources of the company permit of such practice, it is the height of wisdom to make up stock in times of depression when costs of production are at a minimum, and have goods ready for immediate delivery when orders begin to come in. The effect of this is, of course, to flatten the curve of the cycle.

The same is true of the building program of a business. Any company which has been in business for more than ten years can plot its own growth against a curve of general business conditions and guide its own building extension program so as to build additions and add to its equipment not at the crest of the business curve at highest costs, as is usually done, but rather during slack times at minimum costs in preparation for the next upward swing of business.

This adaptation of the individual business to the swings of the cycle will have a two-fold effect: first, to reduce to a minimum the losses resulting from failure to foresee the course of general business and steering one's own business accordingly; second, the aggregate effect of several concerns doing the same thing would be to tend to flatten out the business curve. How marked the effect of such individual action would be in the aggregate, I can indicate best if you will permit me to quote from a recent article of mine.

> When it is remembered that out of a total of 290,105 concerns engaged in manufacturing and mining, 1,019 concerns or 0.4 per cent employing 1,000 or more workers each, give employment to more than 26 per cent of all the wage-earners employed in these industries and that 2 per cent of the plants employ more than 53 per cent of all the workers in these industries, the tremendous aggregate power which this comparatively small number of concerns could exert in modifying the business cycle will become apparent. Apart from the direct effect which they would exert as producers, their immense purchasing power as users of the products of other industries, coupled with the purchasing power of their employees as consumers, would have a great steadying influence on the demand for the products of industries and concerns which might not be taking any initiative or making any conscious efforts to adapt themselves to the business cycle. The cumulative power of private initiative can thus be made a powerful factor in seconding governmental efforts to control the business cycle."[1]

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[1] *Business Cycles and Unemployment*, National Bureau of Economic Research, McGraw-Hill Book Co., p. 133.

AS prices began to rise, confidence gained and expenditures increased, until the country has reached the full swing of expanding activity and rising prices. It is working now not only to supply present needs, but to make up the deficit inherited from the war and the idleness of 1921 and provide for anticipated needs. For the time being the situation is fairly well balanced. . . . How long will the equilibrium be maintained? The outlook for business at this time is very good. If industrial costs and the general level of prices could be held where they are, there is every reason to believe that this pace might be maintained at least through the present year, perhaps longer. . . . The check will come as relationships between various groups of producers are altered, affecting the basis upon which they exchange services . . . The tendency now, as other things (than farm products) are rising is against the (farmers) . . . A great number of the wage-earners will not be able to get their pay increased to correspond with the rises that are talked of in some of the favored industries. As prices rise all those whose incomes are not increased in equal proportion will have to curtail expenditures somewhere. As yet these rising prices are only slightly reflected in retail prices. They are taking place in the processes of manufacture. . . . (There is reason for concern about their ultimate effect on consumptive demand.) Evidently it is not desirable to have prices advanced beyond the level at which consumption can be sustained. . . . The trouble arises from the impatient efforts of the public to drive the industrial organization beyond its capacity. . . . There is good reason for believing that the level of industrial costs in this country is already fully as high as can be sustained, with a general revival of industry and competition over the world. (National City Bank of New York, Monthly Bulletin, April, 1923, pp. 49, 50.)

IN an article in a recent issue of the *Bulletin* (December, 1922, p. 211) the prophesy was ventured that for say a decade readjustment to new general industrial and price conditions would be manifested in minor cyclic ups and downs of "prosperity," and the warning given that this probability should be taken into consideration in determining administrative policy and management plans. We are, therefore, interested in a recent address before the National Monetary Association (New York, June 7, 1923) by Col. Leonard P. Ayres, of the Cleveland Trust Company, in whose statistical work and judgment we have great confidence. The New York *Tribune* reports him to have said that a long period of prosperity has never followed a period of severe depression, and that signs now point strongly to a "depression" which will get into real swing by the fall of 1924.

THE 1923 MODEL SALES MACHINE[1]

BY HARRY R. WELLMAN[2]

MOST of us here tonight have lived through the most interesting cycle in the sales history of this country. It seems but yesterday when the sure sign of spring was the arrival of the tin peddler with his assortment of household wares. Yet, since yesterday, we have seen the growth and development of the great department stores, the mail order houses emerging from back rooms to become giants in the selling field, the modest beginnings of the chain stores followed by the self service stores, and finally, "Lockwood's Store at Your Door," a self service tin peddler if you like, who has swapped his horse for a motor and now arrives on rubber tires. These changes are indeed revolutionary. Yet, when one stops to analyze these changes, one finds the original merchandising fundamentals unchanged: merchandise where it is wanted, when it is wanted, and at the right price. The self service store on the motor truck is delivering the self-same commodity as the tin peddler; namely, service.

Post Roads to Boulevards

Apparently, we have now reached the point where we appreciate that interesting and spectacular as facts may be, they are tame indeed if compared to the causes of the facts. The westward expansion of population, the development of our great railroad and other transportation systems, the introduction of rural mail and parcel post systems, the growth of advertising, and the more recent development of motor truck delivery, are the causes without which we would not have had this spectacular sales development.

Each improvement has expanded the selling radius. As long as the increase in population was constant, these selling districts did not much overlap; or rather, the resulting competition of overlapping territories was not particularly serious. There were always new fields for all. Why then should sales managers pay any attention to the various new-fangled ideas of market research and analysis supposedly useful in reducing the cost of sales or of reaching new markets at a profit? If these sales managers found their known markets were getting a bit cramped, they sent a man to Texas or some other uncovered territory, and presto! the added sales brought up the figures to the year's 10 per cent estimate—and the sales manager slumbered on. However, about 1912 some one discovered that figured in terms of profits these new sales often appeared in red ink! A few businesses that had been thought tremendously successful on account of their sales activities, went to the wall and the post-mortem showed wonderful sales but no profits.

The Beginnings of Sales Planning

Examples of this type caused a number of our more serious thinkers to begin a mild sort of analysis of the cost of selling. At the same time, one St. Elmo Lewis dared to state publicly that it was about time for a sales manager to find out what sales really cost him and to figure out intelligently sales costs in a new territory before he attempted to try to operate this new territory. And so through 1913, 1914 and 1915, we find various businesses beginning to put in a research man, occasionally a market analysis man, and in very rare cases indeed, complete sales planning units. Thanks to the efforts of the Taylor Society and others, it was beginning to be generally understood that something had to be done about constantly increasing sales costs. Unfortunately, the war occurring at this point, serious sales planning was set back at least four years. Why have foolish departments like that when there was more business than one could supply anyway? The answer was unanimous and these departments were largely given leave to withdraw. The year 1921, however, brought back the problem of sales, and today we find an acceptance in theory at least that sales planning is an essential part of sales management.

The Sales Specialist

Unfortunately, this situation offered a wonderful opportunity for those optimists who always appear as specialists. In fact, the parallel was nearly perfect between sales planning experts and scientific management experts during the same period of the development of scientific management. As soon as Taylor's theories had been reasonably accepted, there were countless efficiency engineers, industrial engineers, and "scientific experts" who came into the field prepared to save business—at, of course, so much per save. Their several careers were meteoric. Business is sound at bottom and it did not take long for business to understand that there was a great difference between principles and prophets. The false prophets have perished. The principle of scientific planning remains. During this evolution, the production engineer has changed from a specialist to an every-day working model.

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[1] Paper presented at the Syracuse, N. Y., meeting of the Taylor Society, June 7, 1923.

[2] Professor of Marketing, the Amos Tuck School, Dartmouth College.

Scheduled Production and Sales

In sales, we are just now suffering the specialist period. Possibly these newer experts are a little more clever in their selection of titles, but other than that, they seem to be almost a reincarnation of our old friend, the efficiency engineer. Sales will of necessity have to endure them for a little longer and then they, too, will pass on or lie dormant until some other crying need hits the business world. However, in spite of this unfortunate condition it is fair to say that sales departments generally have accepted certain principles of management and are now beginning to apply them. It seems to be evident that scheduled sales and scheduled production make profits. It seems also to be an accepted fact that neither department can operate at a profit by itself. While the results of this type of planning are not as apparent as they should be, nevertheless the start has been made, and it seems reasonable to assume that the same development will characterize sales planning as has already characterized scientific shop planning and management.

The Dead Level of Efficiency

With the acceptance of the general theory of scientific planning in the sales department, we at once encounter a new problem which, while it may not appear as important at the moment, nevertheless will be of increasing importance as the years go by. Picture, if you will, all of the manufacturing plants in this country manufacturing on the same high-grade, planned-production level.

Assume then, that sales planning has made the same advances. Just how will this situation affect the general business of this country? If you think this picture is too far in the future, consider today's situation when you have four chain stores each operated scientifically, competing on the four corners of a city square! It is generally admitted, too, that mail-order costs have been worked out scientifically and that they are efficient units. Besides the two great competing mail-order houses, there are today over three hundred substantial mail-order concerns. It does not seem unreasonable in the light of these more recent developments to assume that it will not be very long before we may reasonably expect intense competition between well organized and scientifically operated units of distribution.

With this increasing efficiency in production and distribution, it might be well to make a hasty market analysis in an endeavor to forecast the possible additional consumption for this new outfit. The war left us a world shortage of fifteen million men. Our immigration has turned to emigration and has shown a net loss in numbers for a little over a year. The percentage of increase in population has not only not been maintained but has fallen behind. We find the average increase in manufacturing capacity around 30 per cent. We reach a point then where it becomes apparent that science will not alone solve the problem of distribution.

Over-Production

Ever since the war we have heard discussions regarding over-production. Many of our sales managers have taken the point of view, as have our economists, that over-production or saturation is impossible. Those of us who have warned against what we were pleased to call saturation, have received very little consideration. Nevertheless, while saturation may not be possible from the economic point of view, it is quite possible and is very much in evidence in certain lines from the business point of view. With all of this warning, however. we have had the constant urge for more production and more sales. This has come from the banking group. Broadly speaking again, the banks have had very large investments as a result of unwise war expansion and more unwise after-war expansion. Disregarding the facts in the case, they have tried to keep up production and keep up sales.

The Drive for Sales

The other day I was talking with one of the most successful sales managers in this country regarding today's problems. He said, "In my opinion at least, most of the sales problems of today could be solved if the bankers could be brought to see the cost of getting the last $100,000 worth of sales." He went on to say that the sales of his company had equalled the figures set by the bank but that the bank itself had lost money on the last $1,000,000 worth of business that it had forced him to get.

Fortunately, this condition is not general. It is largely confined to groups of manufacturing interests which are directed and controlled by financial groups. In a sense they compete strictly with each other, but in a larger sense their combined operations would tend to smother the other manufacturers, were it not for their enormous sales costs.

The Cost of Paternalism

When we analyze the effects of this type of forced selling, the first thing that comes to our attention is the deadly effect it is having on the retailer. Today, any druggist and most specialty shops can have the following things done to help them sell goods: national advertising, newspaper advertising, window displays, car cards, movie slides, folders and booklets. These we may define as "direct sales helps." The indirect sales helps are legion. Starting with fixtures and painting, they proceed through merchandising charts, sales contests for clerks, accounting systems for stores and model store layouts, to printed turnover tables and personal letters to the wives of the merchants and salesmen! Why should the retailer bother to sell goods? Why should he even attempt to again become a personal merchant? Everything is done for him. His initiative is gone, his store becomes simply the last stopping place for whatever merchandise is being pushed at the moment. When we find costs of distributing a dollar's worth of commodity merchandise mounting to sixty-eight cents because of these methods, we come to the conclusion that this form of paternalism ought to cease. Better by all odds the owned and operated chain store, with its resulting economies to manufacturer and public alike.

Buyers' Strikes

The second effect is beginning to appear in scattered buyers' strikes. Of course, these additional costs have helped swell the rising price level. But, of course, that didn't matter because the increased production meant more people working, working meant wages and wages represented increased buying power. The "Full Dinner Pail" slogan was again heard and then—the merchandise remained on the shelves! Our general buyers' strike is too recent. People haven't forgotten. The cut-price sales of 1921 are still fresh in the minds of the public. As a matter of fact, merchandise bought in those sales is still being worn and there is a lot more of it to be worn now on the closet shelves of thousands of homes. The over-production of 1921 is still with us.

The over-production of late 1922 and early 1923 will be with us until cut-price sales again clear the shelves. The sugar strike, the drop in the price of cotton goods, the slow shoe sales, the beginning of "cut-price sales" of spring merchandise in April all emphasize facts that ought not need to be emphasized. We have neither the public nor the buying power for sales and production schedules based on the years 1916 to 1920. In various over-produced lines, manufacturers are trying to hold the market. It cannot be done. The one universal economic law of supply and demand cannot be artifically directed any longer. We are in the position today of paternalism holding the bag with finance driving for the last $100,000! And at this moment some empty-headed politician jumps up and settles it all with "The Full Dinner Pail," entirely disregarding the fact that there are not nearly as many dinner pails, that the food in the pail costs more, and that the public will not stand for inflated prices.

Advertising Costs

The third effect that becomes apparent is the increasing cost of advertising. Perhaps it would be better to say, the increased cost of using more advertising. In the year 1923 it would seem to be impossible to sell any manufacturer any advertising unless he knew where, how and why he is using it. Nevertheless, it is being done. Bright pictures are painted, wonderful plans are evolved, complete schedules are presented, and before he comes out of the haze, the manufacturer has signed on the dotted line and another bark is headed for the Sargassa Sea of advertising hopes! This is not the fault of advertising. It is just the actual expression of the financial urge for the last $100,000, plus a complete misunderstanding of what advertising really is and what it can reasonably be expected to accomplish. It looks like an easy way to beat out competition, to capture the market and to satisfy the retailer after he has been stocked.

Advertising as an Art!

Perhaps the chief reason for this continuing waste of money in advertising is the manufacturer's absolute lack of knowledge of advertising. He usually regards advertising either as being nearly omnipotent or as so much bunk. Until he regards advertising as sales effort and applies it when and as he would use regular sales effort, this waste will continue. No sane manufacturer would tie up his sales money in an unbreakable schedule. No sane manufacturer would allow other people to pay his salesmen. The only reason he handles his advertising expenditure in this way is because he has always regarded advertising as an art and since it was an art, he didn't know anything about it and didn't want to. When business is bad, he expresses his absolute faith by cutting out the advertising appropriation!

The Flat Tire

These effects and many others of less importance would seem to indicate clearly that the underlying causes should be corrected and corrected speedily. Briefly, the situation can be summarized as follows: There are three major divisions of business, finance, production and distribution. Successful business depends upon these three departments working in harmony. They are indeed the great trinity of business. They cannot operate profitably if operated independently. Unconsciously perhaps, we have thrown the machine out of alignment. We have made wonderful progress in methods of production. We are making progress in sales planning. All of these improvements are worth while in themselves, but are actually harmful to business generally unless the same advance or adjustment is made in finance. While sales planning is reaching the production level, finance should be brought to understand the absolute necessity of working intelligently with the other departments. In brief, it should learn merchandising. In the old days finance could estimate possibilities in terms of plant production. Today it must estimate *probabilities* in terms of sales as well as production.

Stopping the Leak

Granted that we have made all possible production economies, granted that we are now making reasonable progress in sales planning, finance must recognize the present distribution situation by insisting that sales and production must be scientifically determined; that planned sales must have a reasonable basis of probability determined by careful research and analysis; that the cost of selling for volume only must be carefully scrutinized in terms of percentage of profitable sales. Unless this is done, finance ought not to furnish the money that makes bad merchandising possible. The best way to stop a leak is at the source. The source of all the wastes discussed thus far is largely unintelligent financial policies. Stop the funds and you stop their misuse. Finance must recognize that money alone will neither secure nor hold business. Finance must understand that profitable merchandising means just money enough to secure just enough production to fill profitable orders.

Effects of Sane Merchandising

If this improvement can be made, paternalism will cease. Money will not be forthcoming to endow the jobber, the retailer, and by the indirection of cut-price sales, the public. The percentage of unprofitable sales will be reduced to an irreducible minimum. Advertising wastes will be stopped at the source. Probably we would all progress faster in our use and knowledge of advertising, if we abolished the very idea of an "appropriation" and figured our advertising as a real part of sales costs. When this had been done, the elimination of the yearly schedule would change advertising expenditure to sales effort to be used as needed. And while we are at it, we might as well make a clean sweep by paying the advertising agency for its exact service. In other words, pay your advertising salesman to carry out your plans and policies, to spend your money in intelligent sales effort when and as needed, just as you would reward any other salesman in your employ. Sane advertising is, in my opinion, the greatest sales weapon we have today. Used intelligently, it will reduce selling costs.

The 1923 Model Sales Machine

And so with these fundamental adjustments and improvements in process, we come to the 1923 Model Sales Machine, the organization that is to operate successfully from now on. This new machine will deal with facts, not theories. This machine will forget before the war, the war itself, and will operate on *now* statistics. It will accept sales planning after research and analysis, not as an experiment but as the most essential part of the organization. It will place the results of its planning before the financial and production divisions. It will then work in harmony with the budgeted plan of the three divisions and base its sales-operating plans upon the facts as established.

If the driver of this machine, the sales manager, finds that the field he formerly occupied is now overcrowded as a result of war and post-war expansion, he will do one or more of these things: improve his product so that it will make a new and open market; devise new uses for his product for the same purpose; or make a new product that his analysis shows is needed. If the market analysis indicates that he should do so, he will even recommend to his associates that they reduce their capitalization by liquidation until a point has been reached where profitable sales can be made, or that they increase their capital and fight to the finish to eliminate this new competition.

The Changed Signals

When it has set its house in order, the 1923 Model Sales Machine will then begin its real test, the task of merchandising successfully in a world of changed and changing conditions. It will find new barometers of more importance than cycles, steel and building operations. It will follow carefully-reported sales by chain stores and will put on the brakes when it sees only the lowest-priced chain stores making money. It will watch the mail-order business as a nearly perfect recorder of conditions in the farm belt. It will discount the increased sales of automobiles by exactly the amount represented in additional credit schemes. Until the department stores stop buying from hand to mouth, no go-ahead signal will be given. No matter what politicians may say or do, it will keep in mind always that 40 per cent of our wheat and cotton must be sold abroad if we are to have prosperity here. And coincidentally, it will realize that the payment of war debts by nations who usually purchase our grain, cotton and other great raw materials, will not leave these nations with anything but a still further decreased buying power. It will not under-estimate the present effect and the future potentialities of the cooperative buying movement, but will establish its price policies on a fair and understandable basis, alike to small buyer and to large buyer. It will recognize the fact that the specialty of today may become the commodity of tomorrow and that this change should be anticipated by a corresponding change in selling methods.

Efficiency Plus Understanding

This new sales machine must also accept the fact that when science is applied equally to all selling units, a new deadlock of competition will be reached which can be broken only by the application of something other than science. Fortunately, precedents are now established. We know by observation that of the four chain stores operating on the four corners of the square, that store will get the business that adds personality, fair dealing and human selling stimulus to its location, equipment and efficient management.

The Human Machine

So then, this new sales machine faces the necessity of creating a personality for its product among customers and prospects. This will demand skill, ingenuity and understanding. The sales manager's slogan has now become "Sales at a Profit." He no longer has the financial leeway to buy business. Accepting as a fact that he will have to compete with units as well organized as himself, he will be forced to develop ideas. He will probably forsake the golf links and join a library. He will likely abandon the office and seek the people. He will search for the truth as it applies to his business, and when he has found it his organization will reflect it, his public will recognize it, and his business will increase.

Personally, I am not sorry to see the expansion period passing. There is a dignity, a satisfaction, in doing business in the old-fashioned way, that is more worth while than all the profits of our recent slam-bang period. A good product made by an honorable concern, sold on its merits by men who believe in what they are selling, purchased by a retailer who also believes in the concern and who knows that the product he is selling his customers is a good product and will perform an economic good, makes business worth while. The new sales manager will use the slide rule and the Golden Rule together. He will accept the new responsibilities gladly since he can now feel that his business foundations are secure and that he is indeed performing a necessary service for mankind.

DISCUSSION

Willard E. Freeland:[1] "Sales at a profit"—never a slogan more timely! And particularly appropriate for this meeting is the stress that Prof. Wellman has laid upon the necessity for research, analysis and planning as essential steps in securing business profits.

It seems to me that the stress placed upon the necessity of the financial division of the business appreciating merchandising and its problems is a point well made. But should finance have the power of final decision on budgets? I cannot see the wisdom of this. Possibly I do not read the section covering this subject as the speaker intended it should be read.

I believe that all such decisions rest upon management and not upon finance. Finance is only one division of the three broad divisions and the job of coordinating their programs is one of the chief duties of a managing executive.

The issue that arises is this: Shall we refrain from competing in undeveloped, high-cost-to-sell territories because we cannot get an immediate profit return? There is always a relatively high development cost of a new product—a cost that must be distributed over a considerable period of early production. We are familiar with the research and planning by which decisions to make such investments in production are justified. Given adequate research, analysis and planning, we can similarly justify investments in marketing. The decisions of this type belong to management.

If you apply Prof. Wellman's strictures on the weaknesses of the financial division to those businesses controlled by banking groups—particularly of the speculative and promotion type—then I agree with him fully. There you find policies decided by finance, which acts as administrator, and the management is responsible only for executing those policies. The crimes that have been committed in the past four years by organizations of this character merit far stronger language than the speaker has used.

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[1] Professor of Marketing, Mass. Institute of Technology; consultant on distribution problems.

It is true that sales research and sales planning are beginning to be accepted and adopted here and there. It is inevitable that general acceptance will come, if for no other reason than economic pressure. But my acquaintance with those companies struggling with this problem leads me to believe that sales research is only a part of a broader function which we may call commercial research, and that sales planning is but a division of business planning. This comment is to emphasize the fact that sales, production and finance are intimately concerned with and reacted upon by sales programs and operations. The requirement of close coordination of research or planning by divisional staffs becomes such that it forces actual unity of effort in the activities of these staffs. Management is beginning to see this clearly; it is to be hoped that finance will see it.

It is at least hazardous to say that we are approaching a saturation point in our domestic market. But it is not difficult to agree with Prof. Wellman that we are at a peak period in unwise expenditures for advertising and sales promotion. Part of it is merely an expression of that American obsession for dominance in an industry; the plain ambition to be biggest. In other cases it is, as Prof. Wellman so well puts it, a mistaken idea that money alone can buy and *hold* business.

It does not seem to me that the charge of paternalism rests upon a secure foundation. My observations of thousands of retailers leads me to believe that many of them never could have been credited with being "personal merchants." If the work so many manufacturers are doing to make retailers real merchants is paternalism, then I hope we have more of it. When the day comes that we have real merchants running our retail stores, many of the present economic losses existing in marketing will have disappeared. But I think that we can all agree that the present flood of direct sales helps, represents a huge economic waste.

No better analysis of the situation has been made publicly than the portion of Prof. Wellman's paper in which he discusses the changed signals under which the 1923 sales machine will operate. The financial papers and the forecasting organizations virtually ignore the "buyers' strikes" of this spring. But they are a signal.

I am a crank, possibly, upon the subjects of research and planning, of systems aiding management coordination, and of inspection of results through statistical records and accounting reports, but I can join sincerely in the statement that these things mean little unless there be a human stimulus that will create personality for a business and its products.

In closing I must spring to the defense of the sales specialist, a pioneer in a new profession, striving to lead others to see the light, though there may be a mote in his own eye. Have faith that out of great endeavor will come a little group that will be "every-day working models"—of which Prof. Wellman is a leader.

Creed W. Fulton:[1] Mr. Wellman's excellent paper on the 1923 Model Sales Machine throws some very interesting sidelights on sales developments of the recent past. It also emphasizes clearly certain tendencies which require the serious consideration of all distributors. The soundness of his conclusions on most of these issues is unquestioned.

However, it seems to me that the problems of paternalism in business, of overproduction, of driving for the last $100,000 worth of business and of advertising are merely symptoms of the disease from which the patient suffers and that these conditions which Mr. Wellman emphasizes so strongly result primarily from a definite lack of knowledge of the potential market and of how to determine a sales schedule which can be used with even a reasonable degree of certainty in setting up a production schedule.

If any manufacturer could determine the potential market for his products and estimate with reasonable certainty the proportion of the potential business which he could maintain and the cost thereof, would we see the paternalism, the desperate drive, the overproduction or the advertising excesses of which Mr. Wellman speaks?

It appears that a determination of the potential market and an estimate of probable sales therefrom is the key to this whole problem.

All of us are striving to secure maximum profits. In this attempt the value of a sales schedule which can be used as the basis for a manufacturing program can hardly be overestimated. This is a condition we should all like to attain.

However, this is an extremely complex problem. It would appear possible to approach it from two distinctly opposite directions; first, to establish a sales schedule based upon what one is at present best fitted to build; second, to establish a sales schedule based on the assumption that one will equip and organize to build that which can be sold to the best advantage.

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[1] Works Manager, The Goulds Manufacturing Company, Seneca Falls, N. Y.

In the average case, it seems reasonable to assume that a compromise between these two will be made. It is hardly possible in the average business to radically change equipment and organization to sell an entirely new line. Financial conditions frequently prohibit. Therefore, most of us have to compromise at this point and adopt the first method, of selling what we are best fitted to build.

Assuming we follow this course, we are confronted by the fact that we have a plant of a certain definite type and size. We may be making one article only or hundreds of different articles.

The plant may be, and most plants usually are, so equipped and organized that some lines are highly profitable while others are merely burden carriers.

Most managing executives are auxious and are striving by every possible means to increase the sale and production of those lines which naturally are the most profitable.

Under these circumstances, therefore, the sales manager has to confront the very definite problem of securing a certain amount of business in each particular product which he sells. Further, he must face the problem of deciding where he can obtain this business at the lowest sales or distribution cost.

How can these problems be solved? Just how can this highly desirable sales schedule be worked out in my business? That is the concrete practical and highly difficult task which faces each of us who sells either his own or some other man's products.

No doubt many of us have endeavored to make up a sales schedule for our business using the various statistics available concerning the consumption of staple articles and goods.

The statistics available concerning articles of daily personal wear or consumption may perhaps be used with a reasonable degree of certainty to forecast the potential sales per capita in any territory.

However, a large number of us are making products which are not for direct personal use or consumption. Their sale is not, for instance, directly proportional to the number of people in a given territory.

How then can we determine the potential sales of such articles in a given territory?

The trouble with most of the sales statistics available today is that they do not apply to and, therefore, cannot be used in many of our businesses.

In our own particular case, for instance, it is an extremely difficult problem to forecast sales based on the information now available. Many other concerns are facing exactly the same problem. Their products are used in numerous lines of industry. They are sold through various channels of distribution. The manufacturer is frequently far removed from the consumer.

As a contribution given for what it may be worth in helping to solve this problem, let me say that from my own personal experience in attempting to analyze the market for our products, I have reached the definite conclusion that the first step is to determine the actual use or uses to which each article is put by the ultimate user or consumer.

This involves a detailed knowledge of the different processes in various industries and an analysis of each industry to determine the extent to which each article is used in the industry.

Now this is a tedious and expensive proposition but how can any sales schedule be prepared unless you know the use to which your products are put in whatever fields they may be sold?

And knowing the use, how can one arrive at the volume of business except to analyze the size of each using industry, or ultimate consumer.

By analyzing the ultimate use of the product and the size of the field as suggested above, one may determine, with a degree of accuracy which certainly is superior to a purely guess-work method, the potential annual business.

For instance, take the paper industry where various types of machinery are used in fairly large quantities. An analysis as outlined would disclose the total number of machines of each type installed at the present time. The life of each machine may be determined by analysis with a fair degree of accuracy.

From these figures, a reasonably accurate estimate may be made of the replacements required annually.

To the annual replacement should be added the further demand caused by expansion of the industry which varies from year to year.

A final estimate of potential sales may thereby be made which will be reasonably accurate.

As a check on the estimate obtained by the method suggested above, most sales managers can obtain information giving the total sales of his type of articles in any field.

The Department of Commerce reports, census statistics, economic service courses and finally, but not least, a close contact with competitors will provide a check-up on this suggested method of forecasting sales with actual results which have been obtained in any given territory.

It should be kept clearly in mind that the first primary purpose of analyzing a market is to determine the potential business in it. Most of us have available complete statistics on what we have done. We know, in a fairly general way at least, what our competitors have done. But relatively few, however, have approached the problem with the object of determining what we should do.

Mr. Wellman has emphasized the point that sales managers of today must deal not in figures of the past but figures of the present and future and the determination of the potential business in a territory appears to be one of the first steps in the right direction.

Having made this estimate of potential business, the sales manager is next confronted with the problem of determining his proportion of that business. "How much would it cost me to get what I want, what I need, to profitably run my plant?" "How is the best way to attain and maintain my share of this potential business at a reasonable sales expense?"

And also, "What is a reasonable sales expense?" Certainly 68 per cent is not reasonable. In some instances, 3 per cent is considered a normal sales expense, others 10 per cent to 15 per cent is a fair average. What will fit your business and my business after all depends partly on competition and partly on the particular internal conditions peculiar to each business.

No doubt, most sales managers have various ways, not mentioned here, of checking up potential business and probable sales but it must be admitted frankly that the average sales manager talks and figures largely in a comparative way.

Business is either good or bad, or is going to be better or worse.

Why not be perfectly frank about this so-called "Art of Selling?" Why so much mystery? Why still cling to the belief that a salesman was born not made? Why assume that it is all in the man, not the product and service given, when, as Mr. Wellman has so truly pointed out, the essential elements of merchandising now, as heretofore, are goods where they are wanted, when wanted, at a reasonable price.

I have one other conclusion which has been reached from personal experience that I present for what it may be worth. It is that a definite sales plan based on an analysis of the uses of the product and the size of field, as briefly outlined above, can be made to actually produce a material increase in sales at a reasonable sales expense in an old established territory where the competition has been keen for several years.

Gentlemen, this sales schedule is the missing link in the problem of merchandising today. It is the key to increased profits in the business of practically every one of us.

We ought to know, we want to know, how we can solve this particular problem.

Can Mr. Wellman be specific on this point? Can any members of this association contribute the necessary detailed information to assist other members in solving this problem? If any member can, he will have rendered a real service.

HIS (Taylor's) reputation does not depend upon the fact that he designed and built the most successful big steam hammer in the world, or that he developed a method of treating tool steel that trebled its cutting power, or that he determined the laws of cutting metals, or even that he was the father of scientific management. These were incidents in his career, and only the logical results of his methods. At an early date he realized how much of the world's work was based on precedent or opinion, and undertook to base all his actions on knowledge and fact. (Henry L. Gantt in Taylor Memorial Volume, p. 61.)

IN short, almost no one gains long or gains much either from rising prices or falling prices. Either implies enormous social wastes. Therefore, to society as a whole, there is a great net loss, just as there would be from confusion and uncertainty in the yardstick of length or in the pound of weight. Stabilizing the monetary units is a reform on which all classes should unite—debtors and creditors, bondholders and stockholders, employers and employees, rich and poor. (Irving Fisher in The Stabilization of Business (Edie, editor) p. 82.)

THE PLANNING DEPARTMENT AS AN INSTRUMENT OF EXECUTIVE CONTROL[1]

By Keppele Hall[2]

IS IT possible to organize and develop the planning function of a business (or any other social or industrial activity) to a point where it may furnish the chief executive with such an accurate picture of past performances, present conditions and future probabilities that he may safely use it as an instrument of executive control? This I take it is the question suggested by the topic for this evening's discussion. Undoubtedly planning, if it can be made an instrument of control, will do much to remove the uncertainties and hazards from our industrial life and substitute for them a marked degree of confidence as to what will happen in the future under stipulated conditions.

There is no doubt that this question can be answered in the affirmative. The planning department *can* be made a most dependable and effective instrument of executive control. But this will never be accomplished unless certain essential and fundamental facts are recognized and utilized. There are still too many of us who talk rather loosely of scientific management without realizing all that the term implies. There is a tendency to do only part of the work and act as if the job were done. A system of stores control, a method of setting rates on the basis of time study, a plan of routing work through the shop, a scheme of collecting costs, an advertising and sales campaign—any one or a number of these are sometimes cited as evidence that a plant is operating under scientific management. As a matter of fact it is too often the case that these very useful mechanisms of good management are looked upon as being the substance itself, rather than merely the tools that may be used in building the structure.

If we wish to use the planning department to the full extent of its potential value as a factor of scientific management, it is essential that we first bring ourselves to a correct understanding of just what conception we have of management. When Taylor characterized management as a science he really meant all that the name implied. Science is defined as "knowledge gained by systematic observation, experiment, and reasoning; knowledge coordinated, arranged, and systematized." Management considered in this light ceases to become an aggregation of uncoordinated activities, each arising from opinion or surmise or so-called "good judgment," operated largely by means of compulsion or force. Instead it assumes the dignity of a real profession founded on fact and controlled by fundamental principles and laws. Every function is analyzed to determine its individual value and also its value relative to the whole scheme, and only as this is accomplished by continuous study and experiment and a knowledge of the facts can we claim to be developing a scientific method of management.

Any industrial organization presents a complex study from the standpoint of science. For we have to reckon with physical forces in the application of mechanisms to the processes of production and deal as well with spiritual forces in the relationships between human beings. We have to deal not only with chemistry, physics, mechanics and mathematics, but with ethics, psychology, and the science of human relationship as well. Taylor covers all of these when he lays down the fundamentals of scientific management as a study of the job, a study of the individual, the proper allocation of the individual to the job, and a full realization on the part of management of its ever-growing responsibility when it undertakes to direct these industrial and social activities.

The planning department was originally intended as an office in which the preliminaries to starting a piece of work could be arranged before the order for it was delivered to the shop. This meant confining a considerable amount of clerical work to a shop office instead of having it done on the work floor. Skilled mechanics and other workers who had previously done this kind of work were relieved of it and enabled to devote their full time to the work for which they were trained. At the same time clerical workers in the office performed more efficiently and at less cost, work previously handled in a very hit or miss fashion on the shop floor. It very soon became apparent that there were numerous jobs of a variety of kinds in connection with the work of the shop that could be done beforehand in a clerical department, and there followed rapidly the development of the shop planning department as we know it today. In it are located various functions all contributing to the efficient operation of the work. Preparing designs, specifications and bills of materials, scheduling jobs for machines and work places, controlling stores supply, establishing standards, setting rates from time study and analysis, standardizing machines and tools, computing earnings, compiling costs, maintaining records and devising methods of procedure and practice all are now centralized in a planning department. This department is primarily one of service. It is performing for other departments certain tasks that have to be done by someone, somewhere, somehow; and by its performance *it is lowering the cost of production.* No activity has any place in scientific management unless it definitely and in a measurable degree reduces the cost of production without in any way sacrificing quality, or furnishes some information essential to the intelligent operation of the business. The service rendered by the planning department has until recently been largely confined to coordinating the various factors of production, with a view to the elimination of waste in the process of manufacture—waste of material, waste of time, waste of effort. And the only reason that it continues to function—indeed to increase in importance and responsibility—is that it has demonstrated its value in the elimination of waste and the consequent reduction of costs. No more striking proof of this can be offered than that evidenced by the fact that today practically every industrial concern with any pretension to importance boasts its "planning department." Most of these are far from being scientifically conceived or operated according to our proven theories, but they undoubtedly indicate that industry with a growing consciousness of its imperative need is reaching out for something better in management, and is inevitably approaching a realization of where that need may be satisfied.

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[1] A paper presented at a meeting of the Taylor Society, Syracuse, N. Y., June 8, 1923.

[2] Superintendent of Planning, The Joseph & Feiss Company, Cleveland.

When we fit a planning department into a modern industrial organization with the distinct purpose of making it a useful and reliable instrument of control for the highest executives we follow quite logically along the same path that led to its original conception.

By means of scientific investigation and analysis the modern planning department must furnish the higher executives all information that may aid them in making decisions and determining policies for the economical and effective running of the business. All the varied activities of the business whatever their nature are coordinated by means of methods set up in harmony with a unified plan. These methods become the effective instruments for the control of inventories and the manufacture and distribution of the product. They make possible the securing of information necessary not only for efficient production but for the economical operation of the business as a whole.

The last two or three years have witnessed a revolution in our conception of business. Economists are emphasizing the fact that our capacity for production, expanded to supply the needs of war, may be fully utilized in times of peace only if this output can be delivered at a price which will permit and induce the public to consume it; that the surplus of producing facilities will in the end tend to reduce prices by means of more efficient management evidenced in improved methods of purchasing, manufacture and marketing. In other words the elements of finance, production and sales must be coordinated and business must be studied and treated as a whole and no longer as a collection of separate and often competing units.

It is with this larger conception of business in mind and with a full realization of the obligations which it places on the shoulders of management that we look to the further development of our planning function into an instrument of greater service and of practical executive control.

In order to give our subject the consideration it really merits we might quite profitably take up one by one the separate divisions of the planning department, describe how each should be organized to be most effective, explain how each one is dependent on all the others and why no one can be of any value by itself. But such a program would cover not one but several papers together with a general summing up of all of them; so we must make the assumption that we have in mind a well-conceived and operating department into which have been gathered all the activities usually associated with planning, and see how this may be utilized best for the ultimate end we have in view, and what features must be emphasized and strengthened to make it better serve its ultimate purpose.

The first and the most essential thing is to have a *classification* of the business or whatever other activity we are considering. By classification is meant a tabulated outline which shows every activity of the organization, its relation to all the others and the lines of responsibility covering each part and the whole. It is not an organization chart or a definition of duties but it can quite readily be used for both. It forms a basis for budgeting, accounting, cost keeping, stores control, material and tools supply, records of expenditures, sales requirements and financial needs. Far too little attention is paid to this most vital instrument of control. It is frequently provided last instead of first. It is often looked upon as an adjunct of accounting only. As a matter of fact it is indispensable to a simple, clear and accurate picture of what is happening, one that the chief executive or those delegated by him may refer to at frequent stated intervals. For the purposes that are contemplated in this paper the mnemonic system as utilized by Taylor is the most satisfactory. Other methods based on the use of figures, decimals, etc., cannot be used with the same facility and cannot be so easily comprehended and understood. Even at the risk of reviewing something very familiar to most of you it will be profitable to consider how essential the mnemonic classification is to our purpose. The entire alphabet, or as much of it as is necessary, is used. The first four or five letters are used for expense, the last three for investment expenditures, the letter S for stores and as many of the intermediate ones as are required are used for product.

Some valuable uses of the classification can be illustrated by considering, for example, the first group of letters mentioned. A, B, C, D represent Auxiliary, Business, Selling and Departmental activities. These are all expense activities or accounts. Some one individual executive is directly responsible for one or more of them and his authority is delegated to others under him. Assume that the manufacturing manager is responsible for A and D. Now take A—Auxiliary—composed say of AE, AG, AP, AM. They are respectively, Employment, Engineering, Planning and Maintenance—each one a department with a responsible head or possibly with one individual responsible for more than one department; it matters not so long as the lines of authority and responsibility are clearly indicated. AP—Planning Department—is composed of APB, APK, APM, APN, APP, APR, APS, APT, APX—Balance of Stores, Scheduling, Methods, Assignment, Payroll, Routing, Stock, Time Study, Statistical—each one a division headed by some responsible foreman. Finally APB, the Balance of Stores Division, is further sub-divided into APBA—Salaries, APBB—Wages, APBS—Stores and Supplies, etc., etc., for any further division of the expenditures of the Balance of Stores Division.

Again in the other major letters; take B—Business—there may be activities other than those of departments or divisions, such as BB—Interest on borrowed money, BD—Depreciation, BX—Taxes. These latter are strictly expense activities. On the other hand BK would be the Accounting Department and it would be again subdivided by the addition of letters into its various items.

Look at a few others:

A—Auxiliary
    AM—Maintenance Department
        AMH—Heat and Light
            AMHF—Fuel
B—Business
    BU—Insurance
        BUF—Fire Insurance
C—Selling
    CL—Selling Expense
        CLT—Salesmen's Traveling Expense
D—Departmental
    DS—Sponging Division
        DSB—Wages, Sponging Division

All these various symbols from the classification, taken at random, have been presented at some length, even at the risk of boring you, for the purpose of emphasizing an extremely important point; namely, that the classification furnishes a positive and definite place in which every possible expenditure for product, expense or investment may be entered; that there can be no hesitation as to where any item belongs; that it is impossible to enter it in one place at one time and in another place at another; that it definitely fixes the responsibility for that expenditure on the individual who has authorized it; and that it does away with the use of such ambiguous terms as "overhead," "burden," "indirect," "non-productive," "supervision," "miscellaneous,"—each of which means almost as many different things as there are people who use the term.

What better basis than the classification from which to start, if it is intended to make the planning function an instrument of executive control? Is there any other basis from which we can start?

Here then is first of all the executive's dependable and reliable source of information as to an analysis of his expenditure in the office, in the shop and for marketing. He can ascertain exactly what has been spent in every activity of his business and just who has been responsible for that expenditure. Not alone that; but equally important, he can have this information promptly and regularly—every week, every two weeks, every month or at whatever intervals the needs of the business require. In any event he does not have to wait for the yearly or half-yearly closing of the books to know or not know where the money has gone, and why, and through whom.

Next it is obvious that the classification furnishes the only basis on which it is possible to start in setting up and defining *standards* for expense items whether they be in the nature of auxiliary departments, selling expenses, business activities, or of charges for various services or of other necessary—or possibly unnecessary—expenditures. Just as scientific management sets standards for quality and quantity of work to be done in a stipulated time at a predetermined cost at a machine or workplace in the shop, so shall scientific management set up standards for what is to be accomplished in the office and on the road. How much work of a clerical nature will be necessary under various conditions? How many people—and of what qualifications—will be necessary to do it? How may our quotas of sales be set and what shall be the requirements established for training and disciplining salesmen? How long should it take them and what will it cost? Standards must be set for all work of every kind after scientific study and analysis of the job and scientific selection of the personnel. Not only this, but other necessary disbursements which are not directly expended on the product, either in the shop or in the office, such as taxes, insurance, depreciation, telephone, telegraph, lawyers' and engineers' fees, interest, special services and other items too numerous to recall without the aid of a classification, must also be standardized.

After standards for all expenditures have been established from the classification, a budget for each item and each group of items is compiled. The standard represents the ultimate degree of efficiency that can be attained if all conditions are ideal; the budget represents the reasonable expectation of attainment. A careful comparison of expenditures with both standard and budget, furnished by the planning department at regular intervals with explanations of any unusual variations after these have been thoroughly investigated, affords a reliable guide as to what particular activities require special attention and consideration.

You are probably familiar with Mr. John H. Williams' paper read before the Taylor Society at the annual meeting in New York, December, 1921. If not, you should read it in *Bulletin,* Vol. VII, No. 2, April, 1922. In this paper, Mr. Williams divides all expenditures into two great classes which he calls "variable" and "fixed." "Variable" are those like materials and direct wages which increase in proportion to the volume of the output or the amount of business. "Fixed" are those which remain constant within certain limits and do not vary with the amount of business. He gives a very simple formula by means of which it is possible to predict with mathematical accuracy just what amount of business it is necessary to do to break even, just what losses will be suffered or profits made when the volume falls below or rises above this breaking point in given amounts, and exactly what effect any percentage of increase or decrease in cost of materials or rates of wages will have on profits. You are referred to the article for details. The classification, with the standards and budgets of expenditures, permits the division in accordance with Mr. Williams' method and makes the use of his formula possible and valuable.

The planning department must collect and preserve all cost records. It is astonishing to see how comparatively few industrial organizations have reliable information as to the cost of their output. It is even more astonishing to find how many executives have in the past been unconcerned as to the details of cost provided the final balance was on the right side of the ledger. However, the discovery of the final balance on the right side of the ledger during the past two years was such a rarity that business was compelled to know the reason why and to make more of a study of costs. Banks have discovered that if they are to make secure loans to industrial corporations, it is essential for them to have very accurate information as to costs of production, plant capacity and the ultimate probability of success or failure, as well as to have figures on which to make an estimate of the managerial ability of their patrons. This situation has placed the able executive in a position where he demands not only a general accounting of his financial situation but a frequent and intimate scrutiny of costs, in order to know long before his accounting gives him final figures just what he may expect those figures to show and why. As previously indicated costs are accumulated on the basis of the classification and the analysis of expenditures.

Again, if the executive is really to control his business today instead of being at the mercy of every kind of fluctuation in conditions, he must be able to figure with considerable accuracy what the demands for his product will be, how he may stimulate those demands in case they are not adequate, and then base his production program accordingly. To do this he must have recourse to past history of sales in the shape of statistical information arranged for him so that he may be able to draw conclusions that will be safe guides in his future plans. This the statistical division of the planning department must be in a position to supply. What has been the volume of sales in the immediate past and in the corresponding season? How has the total volume been divided into the different items manufactured? How were the sales divided geographically and what are the probable industrial and financial conditions that it is reasonable to expect in the future in different localities? Are certain items of sale likely to have greater or less demand in the future than previously, owing to certain variations in price that will be necessary; and how greatly will sales of various commodities vary from past experience? If sales of more profitable items can be stimulated and of less profitable items retarded, which are the more profitable and the less profitable, and in what volume have they previously been sold? How much will it add to the cost if certain expenditures are made for sales promotion, and will an anticipated increase in volume of busines absorb this additional expense? How much increase in volume of output will be necessary to absorb a stated reduction in price? Will the plant capacity be sufficient to handle this increase and is it a practicable and profitable thing to attempt? These and many other similar questions in innumerable combinations can be answered from historical sales, production and cost data, carefully analyzed and presented statistically.

With the information referred to in the preceeding paragraphs at hand, it is possible to manufacture for stock in the slack periods of a seasonal industry, knowing what kinds and quantities it will be reasonably safe to carry to be disposed of later when the selling season arrives. More important still, it provides the executive with very positive knowledge as to just how far it is safe for him to go in the matter of price reduction or sales promotion expense, in order to stimulate business in times of industrial depression for the purpose of affording continuous employment rather than adding to the seriousness of such a situation by throwing people out of work.

Industry cannot be blind to its social obligation in this respect. The great executive today—successful in the real sense of making a contribution to the wealth and the happiness of the world—assumes this responsibility. Every man and woman who has honestly devoted his mind and body to some industrial pursuit as his contribution to the social community has a right to demand from industry and from society a decent living whether times be good or bad. After all, the rights of property and the claims for profit must be made subservient to the public good. Our great industrial leaders are simply the guardians of a sacred trust. Unless they can administer it faithfully in the interests of the whole of society in a manner that will steadily raise the scale of living and advance the cause of human happiness, they have been faithless to their obligation and have no right to continue in control.

Analyzed expenditure statements, budgets, standards of product and expense, costs, knowledge of plant capacity, ability to forecast sales—these make it possible for the executive to map out in advance a complete program for a season or a year or a number of years. This program will be a picture of all the activities of all the branches of the business—procurement, production, sales, finance, industrial relations—in which each is represented in its relation to the other and to the whole. It does away with the disconnected, disjointed manner of operating so painfully familiar where the production people are working on one schedule, the purchasing agency on another, the sales organization on a third, the financial man trying to keep up with all three, and the personnel director being pulled four ways at once. In other words, it is possible to have all of these activities properly coordinated, each working independently on its own part of the scheme but fully conscious of the fact that it is a part of the whole and not a thing apart and distinct. It breeds a strong spirit of cooperation. The common knowledge that each is working with the same end in view, and that all parts must be equally well done, stamps out—possibly slowly at first but none the less surely—the petty, selfish, competitive actions and thoughts that inevitably exist when all are working without coordination.

In brief, a plan is made which will show the rate at which materials must be purchased and delivered; the times at which various items of output will be produced; the number of people it will be necessary to employ at all times; the amount of sales; the dates of shipments; the amounts of money necessary to pay for materials, pay roll and expenses; the dates on which incoming funds in definite amounts can be counted on; the dates and amounts of payments to be made; when money must be borrowed and when it can be paid back; how much dividends will be paid and how much surplus set aside.

The question will naturally arise, how the Planning Department which has been defined as an instrument of executive control figures with respect to authority. The Planning Department is primarily one of *service* and the question as to its authority need never become a matter of controversy. As a matter of fact, the only authority it exercises is that which is incident to its clearly understood responsibility; namely, that of devising methods, forms and procedure for handling *all* the routine transactions incident to the business and seeing that the prescribed routine is followed.

It must maintain at all times accurate records pertaining to stocks of raw materials and supplies and inventories of work in process and finished stock.

It lays out machines and work places in the factory in accordance with the known requirements of manufacture; it schedules jobs to machines and prescribes the order of work, routes materials to and through the shop. It sets up personnel requirements for all positions and moves workers from operation to operation as conditions necessitate. It sets quotas of work daily on the basis of available materials, personnel and machine capacity; determines operation standards and rates on the basis of time study; computes earnings; analyzes payroll; and maintains production records. It provides the shop superintendent with all the auxiliaries he needs, so that his whole time may be devoted to the production of the best possible output in the greatest amount at the right time, which he effects through various functional foremen.

It analyzes all orders taken by the Sales Department, keeps a record of their condition during process of filling, and advises as to when product for the filling of orders may be expected. It maintains records of available finished stock and prepares reports of a routine or special nature on all data pertaining to sales by product, by customer, by geographical location, etc.

It computes and analyzes the pay roll and distributes all expenses for stores and other items and furnishes journal entries for the control accounts. It furnishes reports as to cost of product and makes any investigations on the basis of records in its custody in matters pertaining to financial expenditures or probable requirements.

It maintains records of the exact quantities in stock of all materials used in manufacture, maintenance and office; notifies when supply is running low; and makes special investigation as to probable future needs at regular intervals or upon request of the Purchasing Department. This is done for the purpose of maintaining at all times an adequate stock for all needs and at the same time holding inventory down to the lowest safe limit.

It computes earnings of individuals and groups, makes reports as to absentees, tardies and labor turnover and maintains records of individual performance.

The Planning Department stands prepared to collect available information that may be requested or to report gratuitously any occurrences of interest in addition to furnishing as a matter of routine such periodic reports as have been prescribed. In short it provides the means of making a complete and unified plan in which each individual and each department can see his own job in relation to all the others; of checking the progress, the shortcomings or the needs of every unit; and above all of establishing in the mind of everyone the fact that the business is one unit working to a definite end, namely, the efficient utilization of materials and human effort for the mutual benefit of all participants.

The question has frequently been raised; what reduction, if any, should be made in the planning activities in times when rigid economy must be practised. Various answers have been made but most have agreed that when curtailment is going on elsewhere the planning function also should be prepared to cut off some of its activities. Taylor speaks of moving men from the planning department to the shop in bad times and back again when things picked up. But in the cases he dealt with there was actually no work or but little to be done, and the men who by training and experience had fitted themselves for planning work and had been promoted from the shop, would have nothing to do. Rather than let them remain idle or lay them off, they were transferred to the shop in which they had been skilled workers, and there they were employed at the skilled mechanic's wage until more work necessitated their services back in the planning office again. This latter, however, is not identical with some of the cases in mind where reductions have been made not because the planning service was not needed but in spite of that fact. Now there is no doubt that times come when the most severe economies must be practiced in every business organization, when things that under normal conditions would be quite right and proper to do or to have, must be foregone. There should be no hesitancy in being able to answer this question promptly and correctly if the classification has been developed and if an analysis of expense is available. The exact cost of operating any planning activity can be noted. If this activity were discontinued or reduced, what would happen elsewhere? Would there be an increase in cost somewhere else that would offset the apparent saving, due to a lowering of output, or a lack of some information that is a necessary aid to efficient operation, or a possible deterioration in quality that might necessitate doing some work over again and so slow up production and consequently raise costs?

If none of these things would happen it would be perfectly proper to make the contemplated reduction. As a matter of fact it should have been made anyhow if the plant is really being run scientifically. On the other hand, if it can be proven that costs would go up or production be delayed and diminished, it would obviously be an act of folly to try to effect a saving at the spigot that would entail a loss at the bung hole. The greatest caution must be observed by the planning department to see that the executive has at hand all the possible information that will enable him to make decisions as to what will be done away with and what will be retained on the basis of undisputed fact and not on opinion or hunch. Too often action of this kind has been taken unadvisably only to be regretted after the harm had been done and too late to prevent undesirable results. Too much emphasis cannot be placed on the very grave necessity of preserving ***especially in hard times*** every adjunct to manufacture that has been demonstrated to be of value, whether the cost is large or small in amount, whether it is a direct or an indirect expense. There are many expenses that are universally regarded as fixed. Everyone knows that such charges as depreciation, taxes, insurance, interest and the like must be met and taken into calculation irrespective of whether times are good or bad. It is recognized as impossible to do anything else. There are other functions in the scientifically managed plant whose cost simply must be considered as inevitable as are "death and taxes" if the organization is to be able to exist successfully through these very times when legitimate reductions in expense are imperative. When very definitely reduced costs have been obtained through methods of routing, assignment, materials control, or any other planning activities, when these cost figures have been proved as they can always be proved if the facts are there, it would be quite as much the part of folly to do away with them under any circumstances as it would be actually to throw money into the street. The mariner does not set up his compass as an ornament to his ship in fair weather when he is navigating known waters in sight of land, and throw it overboard to lighten his ship when the storm breaks. The latter is the occasion when it is of paramount necessity. The scientifically developed planning functions are the compass and charts by which the executive must guide his craft in times of business stress and storm, and to attempt to do without them in such a crisis is only to invite disaster.

There is one very useful chart that every chief executive should have before him at all times, one that the planning department should keep up to date. This is simply a graphical representation of the volume of expenses which the plant will incur for a given output subdivided into the A, B, C and D items and such further subdivisions of each as may be necessary to illustrate the relative amounts of expense in all important items. Say total expenses are $1,000,000, of which A is $175,000; B is $400,000; C is $350,000; D is $75,000. Make four columns of heights corresponding to these amounts, all four inches wide, starting from the same base line. Then A will be 7 inches high; B, 16 inches; C, 14 inches; and D, 3 inches. Write the amounts at the top of each column together with its percentage of the whole, viz.

A—$175,000	17½ per cent.
B— 400,000	40 " "
C— 350,000	35 " "
D— 75,000	7½ " "

Now divide each of these columns or blocks off into the next two letter subdivisions and write the amounts of these and the percentage of the whole expense in the space blocked off which is again proportional to the amount. You may carry this to three letters if you wish. In any event you will have before you a very striking picture of just how much each of your expense items amounts to and what percentage of the whole it is. This never fails to reveal some astonishing surprises as to the proportional amounts of the various expenses, and it frequently reveals the fact that some items which have been discussed with the idea of reducing them are found to be much smaller than expected while others, which were not considered important, loom very large. It makes no difference how often the *amounts* of these in *figures* have been looked at, the idea of their relative importance never shows as clearly as when made in this graphic way.

The writer has had an exceptional opportunity during the past two years of observing the workings of a method of management scientifically conceived and developed. The circumstances were about as trying as could possibly be imagined. The company had moved into a very greatly enlarged plant in March, 1921. About that time the business fell off in volume to a point even lower than it had been in the old and smaller plant. Stretching the imagination and the finances to the utmost, filling orders and manufacturing for stock to the limit, it was still only possible for two years to operate this greatly enlarged plant at 40 per cent of its new estimated capacity, which was just about the production capacity of the original smaller plant. To price goods at a figure that would make it possible to sell them at all, it was necessary to figure the indirect expense at what it would be per unit had the plant been working at 60 per cent of its new capacity. And the greatest efforts to reduce the indirect expense from the 60 per cent capacity to that at which the plant was working, namely, 40 per cent, only resulted in lowering this item a small amount. The great bulk of indirect expense simply could not be influenced at all. It was there by virtue of the fact that the larger plant was being occupied instead of the smaller one, and it could not be lowered unless the new quarters were abandoned, which of course was not considered. In spite of these unfavorable circumstances it was essential to maintain intact every planning activity throughout the entire period. Indeed while the personnel was held down to the lowest possible limit, each individual was called upon for greater effort and harder work on the plan previously made, and the development of methods was continued as a matter of business necessity and expediency. The full application of every available mechanism of scientific management made possible the reduction of direct costs to a point that made commercial existence possible through the most trying period of the concern's life.

An experience such as this is the most conclusive evidence of the value and also of the necessity of developing, and *in times of stress continuing* the planning function as an instrument of executive control. To one who for many years had been working in an advisory capacity as a consulting engineer urging the adoption of scientific methods of management as the great need of industry, the actual experience of being in an executive rather than a consulting position, and of having to make the system work and work desperately, has been a most gratifying one. There has been demonstrated beyond the shadow of a doubt *a far greater value of scientific management than its staunchest advocate has ever had the temerity to claim.*

If future developments in industry are to evidence themselves largely along lines of better management, there will be an increasing demand for men with engineering experience to fill executive positions. This is inevitable, for real management is a science which is steadily developing its own theories and laws and requiring more and more the engineering mind and the engineering approach. This being the case, industry has a right to demand the services of those who can best and most intelligently serve it. The time is passing when the engineer in order to maintain his professional integrity should remain aloof from actual participation in the industrial activities of the world and confine himself strictly to an advisory and consulting relationship with it. If the job is an engineering job the engineer must get into it actively. It is much easier for him to acquire the additional business experience that is necessary to conduct industrial affairs intelligently than it is for the average business man to master the additional engineering requirements that he now lacks. This being the case, the Taylor Society certainly will be called upon to contribute an increasing number of men to industry—men who are competent to fill creditably important executive positions—for there is no other agency today that is studying the great subject of the coordination of the factors of industry from the management point of view. The younger members particularly should have this situation very much in mind, for the future will certainly make heavy demands on them and they must be prepared to render this service when the call comes.

DISCUSSION

ROBERT JULIUS ANDERSON:[1] All will agree that this is a masterful presentation of the facts and we have so much at hand to discuss that one hardly knows where to begin.

Perhaps it is well that we pause a moment on this definition of a planning department. After listening to this paper I am more convinced than ever that we need to get together and strike some common ground.

Generally speaking, when the term "Planning Department" is mentioned we immediately think of just one thing, definite and complete production control through a central office. We ordinarily do not look upon a planning department as being capable of standardizing or designing equipment.

In some of the best organized plants in this country, many of the duties mentioned in this paper as those falling in the sphere of the planning department, are found in other departments.

For instance, how many plants will you find where the statistical division is in the planning department. The rule seems to be that this is a distinct branch of the accounting control under the controller. I am sure that the majority of plants lodge the responsibility for design, standardization of equipment, etc., in their engineering departments. I cannot help but feel that if we should expect of a planning department all that is contained in this paper, then we have very few planning departments.

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[1] Production Manager, Bowen Products Corporation, Auburn, N. Y.

A case in question is an industry in close proximity to Syracuse where two of the most prominent industrial engineering firms in America installed a production and cost control system; and the statistical division is under the auditor, while the design of equipment, standardizations of tools, etc., is under the engineering department.

I believe that I am throwing the light on the true state of affairs when I say that if you sent out a questionnaire to all those responsible for the operation of industries (I mean those thoroughly trained in scientific management), and asked them to define what a planning department should consist of, 90 per cent of them would tie it up with the ordinarily accepted duties of scheduling, dispatching, timekeeping, storeskeeping, time study, and the balance of those duties that are absolutely necessary for scheduling and routing production through a plant.

I am sure that if we questioned further we should find that these questionnaires would prove that the cost records, statistical department, and payroll analysis, would be lodged in the accounting division, and that preparing designs, specifications and bills of materials, and standardizing machines and tools, would be in the engineering department.

If this is true does it mean that this presentation of a planning department is wrong? It does not. It does prove, however, that if this is the true planning department then it is a much more complete and active controller of all routine and standardized procedure than has heretofore been recognized.

On the other hand if the generally accepted idea of a planning department is correct, then this planning department described by Mr. Hall represents some larger unit and should we be wrong in naming it the department of industrial engineering or of scientific management. I do not wish to be misunderstood, therefore I reiterate, I do not contend that Mr. Hall is wrong, I merely ask that if he is right isn't it high time we accepted it as a fact. Perhaps you will say, "We do accept it" and I'll then say to you, "Name me the industrial engineers in this country who have taught this creed." "By their works ye shall know them" is no idle saying.

If we are to discuss the planning department as an instrument of executive control, would it not be well to discuss it on a common ground, and if that common ground is the one given, as in this paper, there are few of us who can speak with authority born of actual experience such as Hr. Hall has had.

We have been told what a planning department of this type will do, and to refute the facts is not to deny their existence, as this is a planning department in actual operation.

Suppose we should ask, "What is there that a planning department will not do." Well, at the outset I believe it is well to state that *under no circumstances is a planning department a substitute for executive ability.* At times it seems as if we were placing too much faith in organization and these highly centralized units; necessary though they be, they have tended to mitigate individual creative ability. This is not as it should be, but nevertheless it is a fact.

In talking with the general manager of a large plant where an engineering organization has recently installed the Taylor system of organized production and cost control, he said, "Why, it is appalling the way everybody seems to think that this system will run itself. At least once a week I have to get all the executives together and tell them that the system is useless without real executive ability, and that it isn't an automatic control." Who is to blame for this condition? I say that the engineers who made the installation are to blame. Too long have we heaped the blame for the wrong attitude on the management. Surely the system cannot be blamed for it is a lifeless thing without the cooperation of the persons who make it. We realize that many are called but few chosen. We have had too much grafting on of so-called scientific management, and not enough of building up. We recognize the fact that the principles are always the same but their application is a different process in most every case.

Does the sales department sell what the factory produces or does the factory produce what the sales department sells? This policy alone will often decide the fate of the planning division.

Does the industry manufacture a standard product such as a typewriter, or does it produce thousands of items each greatly different from the other? Do they manufacture for stock or for customer's order? Are the parts interchangeable or are they all special? Is the unit complete when first assembled or does it have to be completely assembled, tested, torn down, shipped and re-assembled at a distant point, such as the problem we find in the building of a Diessel Engine?

Do we want a job cost, a process operation cost, or an average complete cost? What kind of labor do we have; of high intelligence, average intelligence or low intelligence? Are we dealing with organized labor or unorganized labor?

Perhaps you say, "What difference does it make"? Well, it makes all the difference in the world, for it doesn't make any difference how much the captain on the bridge understands his job, if the engineer in the hole doesn't know his signals they are useless.

Often we have seen what appeared to be a very efficient executive control completely fail because those in charge didn't know what it was all about. How many times have we heard an engineer remark that management is woefully inefficient and unable to appreciate scientific management. If that is true the engineers are to blame, for though many of them are capable technicians, they are mighty poor salesmen. *The control will merely be efficient in direct proportion to what the executives expect it will produce and how well they operate it.*

I am glad that this paper emphasized the fact that industry cannot close its eyes to its social obligations. If systems fail it may be due to the fact that we have paid little or no attention to the personnel that manage them.

Every man is a victim of some fear, and in the case of the shop worker it is the fear that he will lose his job. Next to his wife and kiddies the great hope is that he will be steadily employed. If industry would think less of bonus systems, profit sharing systems and such like, and more about steady and uninterrupted employment for its employees, we would have less so-called labor trouble. I care not what your system is for rewarding your workers, if they are steadily employed throughout the year about 90 per cent of your much-talked-of labor trouble will disappear. This is the most vital thing in industry, and if for no other reason than this, scientific management should have long ago found its place in industry.

This paper raises the question of the planning department's authority, and its author answers by saying that the question of authority should never be a matter of controversy; but the fact remains that we suffer more from this one thing than anything in industry. Men high up still cling to the old idea that they should have a finger in everybody's pie, and if a group of executives in any industry do have this viewpoint, and think that everytime one of their duties is transferred where it may be done more efficiently because of the better functioning of all the factors that someone is stealing their job, your planning department may just as well be scrapped, for it is doomed to death. Talk about shop men being afraid to teach anybody anything! We can start a good deal closer home and find the same condition. Before you expect any executive control to function you must not only make sure that all the executives understand it as you understand it, but you must make sure they believe in it, are willing to work for it and with it, as you do. If you fail to obtain this viewpoint, spend your good time figuring out how many times your employees have to stop to blow their noses and compute the time lost thereby, for it will mean just as much as a planning division operating in an industry that is befogged with tradition.

To me the outstanding point in this paper is the one brought out so clearly at the end; that engineers cannot remain aloof from actual participation in industrial activities. We do need some consultants who will come to us when the patient is either dying, needs resuscitation, or just a consultation at his bedside; but we need many more general practitioners who are with the patient all of the time. Far better for us to forget we are anything, roll up our sleeves and go into industry willing to do anything until we can build a proper foundation for the scientific control, than to walk in tomorrow morning with a Heaven-be-praised attitude, a few dozen copies of shop management, and think we are going to get anywhere. It has failed in the past, it is failing now, and it will fail in the future.

Industry as a whole, and of course this particularly applies to scientific planning control, is suffering from too much installation and not enough operation; too much poulticing and not enough surgery; too much of what I call spiritual cocaine.

The great danger now is that this thing we call scientific management will be looked upon as a cure-all, a sort of spring tonic for a business emerging from a long winter. If we allow industry to go at this ideal in any such half-baked manner as a portion of it grabbed industrial democracy, profit sharing, welfare work and an industrial relation policy, we had better bury it right now and leave the patient to die a natural death rather than to commit scientific suicide.

What we must realize is that after all what business needs more than anything else is religion; a policy of live and let live instead of, "He hit me first." Until we thoroughly imbue our organization with the idea that each is aiding the other in making his job not only more desirable but more efficient, we had better go easy, for business is literally covered with the wrecks of so-called scientific control systems installed by individuals who, in many cases, might better have pushed a truck in the plant where they made their so-called installations—emphasis on the "stall."

So, I say, first we should strike a common objective as to what a planning division should consist of; second we should broadcast that explanation; third we should definitely state what it will do; fourth we should tell the industrial world what it will not do; and fifth we should warn those concerned that the actual installation is a major operation and that unless the patient has good heart action and a good physique, although the operation may be successful, the patient can die of complications.

Finally, we must quit talking in the air about this thing as if it were something only for Einsteins, and talk about it like we do our other tools. Too often we think a thing must be shrouded in mystery and steeped in tradition in order to be worth while.

Our problem is simple and can be paralleled by that story told by Dean Johnson of how to play golf: "Here is the hole; here is the ball; here is a club; put the ball in the hole."

Here is a plant; here is a product; here is an organization. Manufacture a quality product at a low cost and market it at a fair profit, and use the existing organization to do it. The doing of this requires adherence to certain principles, but it has been done in the past, it is being done now, and our job is to do it better in the future. If we fail, if scientific management goes the way of many other great movements, we are to blame for we are the torch bearers. We must keep faith with those who have gone before and pass on to our heritage that which we were so graciously given by the pioneers of industry. Again I say, "We are the Torch Bearers."

HOWARD G. BENEDICT:[1] The instruction to the discussors, to prove this paper wrong, is a well nigh impossible task. The advantages of a planning department such as Col. Hall describes may be debated by those not familiar with operating a plant on this basis, but it is undebatable from the basis of fact and accurate knowledge. This being the case, I can only emphasize a few of the points brought out by Col. Hall.

The planning department does not perform *new* functions so much as it performs tasks, as Col. Hall says, that have to be done by someone, somewhere and somehow. It performs these tasks much more effectively and more economically because of its specializing on them, and utilizing the best talent available for these planning functions, instead of leaving the planning (such as it is) to be done after the jobs get into the shop. Another point, any planning department that is worthy of the name is continually lowering the cost of production and getting the production and sales under closer control. Some executives are prone to look upon a planning department as a superfluous adjunct, but even after it has performed its initial task of reducing excessive costs of operations, it is more than paying for itself in holding costs down, in controlling inventories, and in enabling the executive to adjust production and sales to meet current conditions.

As Col. Hall has pointed out, particularly in times of depression does the planning department justify itself, for through it the executive has at hand at all times all the possible information that will enable him to make decisions as to what can be done away with and what must be retained, on the basis of undisputed fact and not of opinion or hunch.

The department which Col. Hall has described is somewhat of an innovation as a planning department. In years past when we have spoken of planning, we have usually thought of production planning, and in the last few years we have done a good deal along the lines of sales planning. But you will notice that in the Joseph & Feiss planning department which Col. Hall describes, they plan for the whole business—sales, finance, production, personnel, etc.—and it marks a decided step in advance in management practice. In most cases in the past, while the cost department has frequently been affiliated with the planning department because of its close relation to production activities, yet the general accounting department has been a thing apart, its main contacts being through the weekly or monthly summaries for incorporation into the balance sheet and analyses of expenses. Now, Col. Hall has given to the statistical division a planning function and made it a division of the planning department; and I think we may well stop, look and listen, and consider if this innovation is not a well founded one, and one that should be more generally followed, especially when we use mechanical tabulating equipment as is used at the Joseph & Feiss plant. The average accounting department delivers mainly post-mortem figures that are used but very little, yet all of the statistics which we accumulate should be used intensively and extensively in planning our immediate and future activities—sales, finance, production.

One of the planning functions of the statistical division is the preparation of a budget for each item of expenditure and activity, as pointed out by Col. Hall and also by John Williams in his paper some time ago. We should operate on a budget by all means, but to lay out a budget for expenditures, presupposes a budget for sales actually endorsed by the sales department as their total task or quota, and then used by them in directing their sales through the year. Of course our actual business may vary from the expectancies, and with it we can vary our expenditures on our budget, but a budget for our expenditures must be based on a certain volume of a certain kind of business. If either the volume or the class of business varies greatly, our prediction of expenditures will go wide of the mark. So it is particularly necessary for the sales effort and stimulus to be continually exerted to produce both the volume and kind of business that has been predicted, and upon which the entire remaining activities of the business are being based. There is entirely too much of an inclination in some lines for the sales departments to evade predictions of what they are going to sell and direct the sales efforts to the disposition of those classes of goods. When asked by the production planning division as to what kinds of product shall be built, in what quantities and at what seasons, the sales department frequently replies: "We don't know what we are going to sell, or in what qualities; we can't tell until the salesmen turn in the orders for whatever they happen to dig up, but we want you to have the machines or goods ready for immediate shipment when the orders come in." The result is that with the sales effort and production effort not being directed along uniform lines, the factory builds up stocks of certain goods which the sales department does not dispose of; and other items which do come in strong are not in stock and customers have to wait a long time before delivery, frequently resulting in cancelled orders. So we *must* have both a sales prediction and sales effort and stimulus along the lines that we make our production and expenditure prediction and plans.

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The success of all planning effort, and of all industrial effort, for that matter, is dependent upon the coordination of all activities, but in planning work it is particularly important, as Col. Hall has stated, that while each is working independently on its own part of the scheme, they be fully conscious of the fact that it is a part of the whole and not a thing apart and distinct.

Col. Hall has well brought out that industry to-day is demanding of the engineer more than advisory and consulting services, that he is being called in by manufacturing industries to assume actual responsibility for the continual operation of the plans inaugurated as well as for their initiation. There is a well-marked tendency in this direction as owners have come to realize that sound management practice is not something to be absorbed in a few weeks or months, but that it takes years to develop to its ultimate, and that in the interval there daily arise problems, the proper solution of which, coordinated with the whole plan, is essential to the success of the entire undertaking and business.

H. K. HATHAWAY:[1] Colonel Hall's paper is to me disappointing in two respects: first, that I can find almost nothing in it with which to disagree, and my disappointment would have been greater if I had; second, that it will leave many up in the air and wondering how and by what sort of mechanism the many and much desired ends described are brought about.

As Colonel Hall intimates, the mere designation of an office by the name Planning Department does not make it one in fact.

The proper organization, equipment and manning of a planning department takes one into every phase and activity of a business and hence should only be undertaken in connection with its complete internal reorganization.

Establishing a planning department with all that it involves is only part—perhaps half—of the job. The other part is making it work and accomplish, in connection with the other features of the system, the results for which it was created and which Col. Hall has so convincingly pictured.

The literature of scientific management, not excepting that of the Taylor Society, is still all too meager with respect to the practical means for the application of its principles. This fact, when considered with others, I believe, may be taken as an indication of lack of interest in essential detail or an unwillingness to make the effort necessary to their mastery. I am taking this opportunity to voice my perennial plea for a greater consideration for the mechanism of management and particularly for that developed by or under the direction of Taylor—which even as he left it is far ahead of much of more recent origin and of which even at this date a surprising ignorance exists. I know that Col. Hall will heartily second this plea and not object to my taking his paper as an excuse for making it.

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ON THE CONTRIBUTION OF SCIENTIFIC MANAGEMENT TO INDUSTRIAL PROBLEMS[1]

By H. S. Person[2]

THE time has not come for a definite statement of the contribution of scientific management; in fact, that time may never come, for industrial problems are continually changing and with each change scientific management has something new to contribute. It is today contributing more to the solution of industrial problems than at any time in the past, and it seems certain that a decade from now the evidence of its influence will be still greater. Such are the facts, although one can count on the fingers of one's hands the plants which may properly be called scientific management plants; for it has in one fashion or another penetrated industry, not only in the United States but in every industrial country, inspiring here a new mental attitude, there a new plant policy and in another place new methods of operation—in the majority of instances without identification as scientific management.

For, although there has been much opposition to scientific management, among executives as well as workers, that opposition has on the whole been superficial; superficial in that it has really been directed against the man Taylor, his incidental observations and his methods of exposition, rather than against the substance of his philosophy of management and even his system. At the same time that some managers and workers have damned Taylor and scientific management, industry has been coming little by little to his mental attitude, his philosophy of industrial management, and has even approved and adopted now one and now another of the elements of his system—provided it was not labeled scientific management.

It should be borne in mind that no one prior to Taylor had enunciated a logical and comprehensive philosophy of management, and devised a system of operations to give any managerial philosophy and body of principles a concrete expression; therefore any theories and mechanisms of management existent today which conform to those of Taylor, may be attributed to the influence of his exposition. It should be borne in mind also that Taylor too modestly declared that the elements of his system were not original with him; that he had merely taken them from here and there, put them together into a purposeful relationship and given them a new meaning. We say that the Wright brothers invented the aeroplane, but when we examine the parts of the original aeroplane separately we find nothing which did not exist before; what the Wright brothers did invent was a new combination which would accomplish a new purpose. So it was with Taylor's discovery or invention or formulation of scientific management.

The fundamental element of Taylor's philosophy of management is that the solution of the problems of management must rest on a factual basis and that tradition, guess and prejudice must be eliminated. That is an axiom of industry today, although practice has too little accompanied preachment. Perhaps the next most fundamental element of his philosophy is that the factual basis must be determined by utilization of all the apparatus of investigation furnished by science (hence the name scientific management), and today as never before industry is using the approved methods of science, experimental and statistical. Another element of Taylor's philosophy, derived by *his* scientific investigation of *his* problems, is that when a large number of people are working together at specialized tasks for the accomplishment of a common purpose, these specialized tasks group into two grand divisions each of which requires a special temperament and skill. One is the group of specialized tasks pertaining to planning and preparation; the other the group of tasks pertaining to detail execution. For the segregation of the first of these groups he devised the planning room, where *what, how,* and *when* should be taken care of; and today in industry an establishment without a planning room is very much of a back number. Organized labor has been known in some of its controversies to make much of the point that the particular employer is so inefficient in management as not to have a planning room, with the result that jobs do not come through regularly, materials are not always available, and in general there is "unemployment within employment." There are even signs that workers are coming to recognize the value of the stop watch as an instrument of investigation "when properly used;" and one of my most interesting experiences was the appearance in my office one morning of an industrial engineer and a secretary of a local, inquiring if the Taylor Society could furnish a stop watch—they "had been looking all over the city for one;" were "in a hurry to make some investigations in order to confront employers at a conference with *facts.*" Leaders and advisers of organized labor, in sufficient number to be significant, are coming to the point of view that the establishment of a standard time in which an operation may be performed will eliminate one of the guesses on which wage rates are based, with a consequent nearer approach to stability of conditions, rates and workers' income.

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[1] Reprinted by permission from *Brotherhood of Locomotive Engineers' Journal.*

[2] Managing Director, Taylor Society, New York.

One might write at length concerning the manner in which and the extent to which the Taylor philosophy has influenced managerial and labor thinking, and Taylor methods have been incorporated into production systems. But it is not necessary; the reader can prove the point for himself. He has but to reread Taylor's "Shop Management," recall the actual changes which he has observed come into production methods, and put the two together.

The Taylor principles and system of management, as first presented, were concerned principally with *shop* management; it is natural therefore that their greatest contribution should have been towards better factory management. But not less significant, although at present less extensive, has been their contribution towards better management of an enterprise as a whole; better definition of the purpose and policy of an enterprise and better coordination of the major departments —selling, production and finance.

For it has occurred to some managerial minds that the problems of the enterprise as a whole are similar in broad outline to the problems of the shop, but on a greater scale. Just as shop management may bring specific orders, jobs, workers, machines and materials into a harmonious and economical relationship, mutually profitable to employers and workers, so the management of the enterprise as a whole may bring orders in mass, workers in mass, materials in mass, and equipment in mass into a similar harmonious and economical relationship, mutually profitable. The decisions pertaining to the enterprise as a whole, like the decisions pertaining merely to the factory, should and may have a factual basis; that factual basis should and may to a considerable extent be determined by the methods of science; even the major specialized tasks of management of the enterprise as a whole may be grouped into two grand divisions—planning and preparation on the one hand, and execution on the other. There should and may be a super-planning room for the enterprise. Therefore the development of sales engineering and market analysis, the formulation of budgets, master plans and schedules of sales, finance and production, and consolidated reports of departmental progress to check against these plans; just as in the shop there are now schedules and progress reports. It is the application of the principles of scientific management along these major lines as well as in detail, which has permitted certain firms to go through the recent depression with 98 per cent of normal sales, processing, and consequently employment of workers.

Now this is a matter of utmost importance. Wise managers and wise workers should strive for stabilization of the operations of an enterprise. It is not sufficient merely to stabilize the operations of the shop *when there are orders* (this is what scientific management in its early developments has accomplished); it is even more essential to stabilize the business and assure a *predetermined regular flow of orders* (which is what scientific management in its later developments is accomplishing in a number of enterprises). This is true for several reasons, two of which stand out; regularity of employment and income to workers and of profits to employers is more essential to human comfort than mere occasional economy resulting in occasional high wages and high profits; also regularity of orders, processing and employment has a great deal to do with detail economy, high wages and good profits. Scientific management has reached into the field of general management as a matter of necessity—it was inevitable. For as soon as it had taught managers how to develop the shop management of least waste, with its better wages and better profits, it realized that this management is dependent upon continuous performance; therefore, with the vision and persistence of Taylor, his managerial descendents have not hesitated to carry their principles into the field of general administration. If the reader should make two lists of enterprises, one of plants in competitive industries which have maintained reasonably regular operations and employment during the depression, and another of plants which are generally identified as Taylor plants, he would be astonished at the similarity of the two lists.

Scientific management has made its influence felt on a still higher plane. The present administration of the Department of Commerce has been endeavoring in many new ways to assist American industry. One was the appointment of a committee to investigate the extent of and the reasons for waste in American industry. The report of the Committee on Elimination of Waste in Industry is considered a most important public document; it was hailed by organized labor as one of the most important documents in their interest ever published—for it publicly placed the chief responsibility for waste on management. That committee was composed largely of Taylor engineers, its point of view was entirely Taylor, and the standards by which it judged waste were the standards, simon-pure, of scientific management. The present campaign of the Department of Commerce for simplified commercial practice (standardization of products within a trade) is the application in a large way of the good old scientific management principle of standardization of the products of the individual shop as an individual measure of economy.

The outstanding contribution which scientific management is now making, is to the solution of the problem of industrial relations. There have been advanced during the past four or five years many theories concerning the problem of industrial relations, nearly all of which have not and could not find practical expression; there have been many specific things attempted which have proved insufficient because they have not taken into consideration fundamental facts of human nature and of industry; now there is evident a tendency to turn for solution to the one thing which in individual plants has shown a large measure of success—*management on a factual basis;* in other words, scientific management.

There are many, both workers and managers, who believe that the only practicable means of settling industrial disputes is through strikes, lock-outs, jockeying in conference, temporary compromises, and so on, even though they recognize that these things are wasteful and costly to both sides. But there are others, both workers and managers in increasing number, who feel that the number of controversies would be materially reduced, if all the essential, indisputable facts concerning the situation which have given rise to a dispute could be laid on the table in negotiation, or even informally reviewed by representatives of both parties before the stage of formal controversy and negotiation is reached. When leaders of the two sides to a potential serious controversy approach each other with this common mental attitude, begin to consider the details which have contributed to the unfavorable situation, endeavor to get at the real facts, inquire into the conditions of the business and of the management, and finally attempt to formulate constructive remediable measures, it is found that these remediable measures have to do with the administration and management of the enterprise, and are in spirit and in technique essentially identical with scientific management.

For "industrial relations" cannotes relations in the conduct of enterprise; relations with respect to policies, plans and their execution. These relations pertain to no one thing, but to everything in the enterprise; they are found in no one spot, but everywhere in the enterprise. They are as long, as broad and as deep as is management. The problem of industrial relations is a problem, *the* problem, of management. A personnel department may perform many useful ***specialized*** functions; but it should always be borne in mind that everyone in the enterprise is responsible for a personnel function; that the entire enterprise is the real personnel department. Problems of industrial relations arise out of the policies adopted by owners and general management; out of the nature of general plans and schedules; out of the detail plans, schedules and standards established by the planning room; out of the conditions of work, nature of the equipment, and nature and adequacy of the materials provided; out of the conditions of employment and the wage rates which are established; out of the mental attitudes and specific conduct of executives and foremen. The diagnosis of a situation which offers a potential controversy must be a diagnosis of the methods of management; the remedy must be practical measures for improvement of the management; and those practical measures which most frequently improve the management in such a way as to remove the unsatisfactory conditions, are found to be measures which express the principles of scientific management.

In this connection I should like to call attention to a most illuminating book—Common's "Industrial Government." It is a report on the new, forward-looking measures developed by some eighteen plants conspicuous for their attempts to solve their problems of industrial relations. They are plants which represent the progressive movement in management—and nearly every one is either an avowed Taylor plant or a plant which represents the spirit of scientific management.

It is my own conviction that at some future time, when the development of scientific management can be reviewed in proper perspective, its greatest contribution to the solution of industrial problems will be discovered to have been this: That at a time when American industry was dominated by ideals which made management but a game of chance, of trading in natural resources, growing markets, materials, equipment, processes, workers and equities, with now profit and now loss—that in the midst of an industrial society with such ideals, Taylor injected the concept that a business should exist for social service, that its purposes can be defined, its objectives planned and scheduled, detailed execution be so controlled as to contribute most economically to the final result, and that the final result can be a productivity of useful things so shared as to increase the comfort and promote the happiness of all concerned. In short, the Taylor philosophy of management first gave logical and coherent expression to the ideal that business should be an aggregate of processing enterprises instead of an aggregate of speculative enterprise, and his system of management pointed the way to the technical accomplishment of that ideal.

Most of our industrial problems are the consequences of conduct which expressed the point of view that business is a speculative enterprise, a point of view which has by no means disappeared. The remedy is to substitute conduct which expresses the point of view that business is a measurable, controllable processing to meet a social need. To the extent that such a substitution is made will industrial society increase its demands upon scientific management.

I believe the day is not far distant when organized labor will be the principal proponent of scientific management. It will insist that the enterprises in which it participates shall cease to be speculative and shall become stabilized processing activities; and when it has so insisted, and has been countered with inquiry as to how that is to be accomplished, it will—whether it uses the term or not—recommend the methods of scientific management.

THE successful cooperation of sales and factory organizations depends first of all, therefore, on a sympathetic understanding of the other department's problems and requirements, a condition that can be brought about only through frequent conferences properly directed. A knowledge of company policies, of set standards of quality and of delivery possibilities and requirements must be shared by sales and factory executives alike. The coordination of sales and factory programs is vital. The setting of sales quotas by territories is a valuable incentive in carrying on sales programs, and on the other hand, careful planning of production is a prerequisite to the successful completion of the factory's part of the common program. Continual and careful supervision must be exercised over the service given by the offices as well as by the producing divisions of the business. Careful inspection has been designated as a vital necessity insofar as the factory departments are concerned, but it is equally essential that continual supervision be applied to office procedure and activities if the required and expected service is to be rendered. (Porosky, Practical Factory Administration, p. 236.)

THERE are few managers today who do not at least hope for the installation of a perpetual inventory system not only for the purpose of maintaining a record of goods on hand, but also because of its control possibilities. With a complete inventory system it is possible to establish and control the amount of money tied up in merchandise inventories. It cuts down the period of shutdown for taking physical inventories, and avoids thereby the resultant loss to the company and to the employees. It helps the production and scheduling departments to lay out an adequate and reliable production program. It aids in giving delivery promises to customers. It makes possible the consolidation of the ordering, scheduling, and stores record departments with the resultant reduction in overhead expense. It assists in the proper costing of the product, a function now universally recognized as one of the most vital in factory administration. (Porosky, Practical Factory Administration, p. 68.)

SELECTING ELEMENT TIMES

By O. A. Parmenter[1]

ENGINEERS have advanced several solutions for the selection of element times and the determining of standard times. Some have used average times, mean times, average times averaged with the best time and selected times. The method shown here differs slightly from these, and proposes to select the time which most nearly predicts characteristic and habitual action.

The operation used for illustrating the method shown is stamping paste-board boxes. These boxes are 8 inches square by 4 inches deep and are used as containers for garments. The work is done by a girl operating a motor driven machine with a fixed base upon which the box is placed. The head of the machine contained adjustable dies having letters and numbers, the head being actuated by the motor drive when released by a foot pedal.

The operator is given job cards specifying the characters to be stamped, and the number of boxes required. She places the job cards in a wire clip on the head of the machine, obtains the boxes from a stock about 30 feet distant, loads them on a truck and wheels them to the machine. She then places a bundle of boxes on a truck at the left of the machine, adjusts the letters and numbers in the movable head of the machine, as specified by the job card, and then stamps the quantity of boxes required. She then places the job card on the pile of boxes for identification, resets the letters and numbers in the movable head according to the next job card and proceeds as before.

When the operation was first studied the elements were as follows.

1. Pick up box from stock pile.
2. Lay lid at left hand of machine on stock pile.
3. Place box in machine, holding with both hands against guide.
4. Trip machine with left foot.
5. Pick up lid, place on box.
6. Step to right and place box on truck.

It was noted that the guide on the machine was defective, and if a suitable guide were attached, the motions of laying the lid down and picking it up again might be eliminated. A new guide, modified to locate the box in the correct position beneath the head was installed. Then the stamping was tried while holding the lid in the left hand, and was found to be easily learned by the operator.

These methods enabled the box to be placed more quickly and eliminated laying down and picking up the lid.

It was also noted that after the boxes were stamped and placed on the truck, the operator had to straighten the pile frequently to prevent them from toppling over and to get the maximum number on the truck, and a stand on which to pile the boxes was designed. The stand consisted of a base 7 inches square, supported about 30 inches from the floor, so the operator would not have to stoop when placing the first stamped box. In order to keep the boxes from toppling over, two uprights, slightly inclined backward, were nailed to two adjacent sides of the base so that the boxes when stacked on the base and against the guides were kept straight and did not fall out.

This stand was then placed close to the right hand of the machine so that the operator did not have to step to the truck in order to pile the stamped boxes.

The operator was then shown how to stand with her right foot adjacent to the machine trip-lever, and with her left foot straight back from the right. In this position, without moving either foot, she could pick up the box, stamp it and place it on the stand without moving either foot. Since the operator was relieved of strain by frequent trips to the stock pile for truck loads of boxes, this position did not cause fatigue.

The detail of stamping the box lid then consisted of the following elements:

1. Pick up box, bottom down, with left hand.
2. Remove lid with right hand and place in machine against guides, left hand holding bottom and steadying lid.

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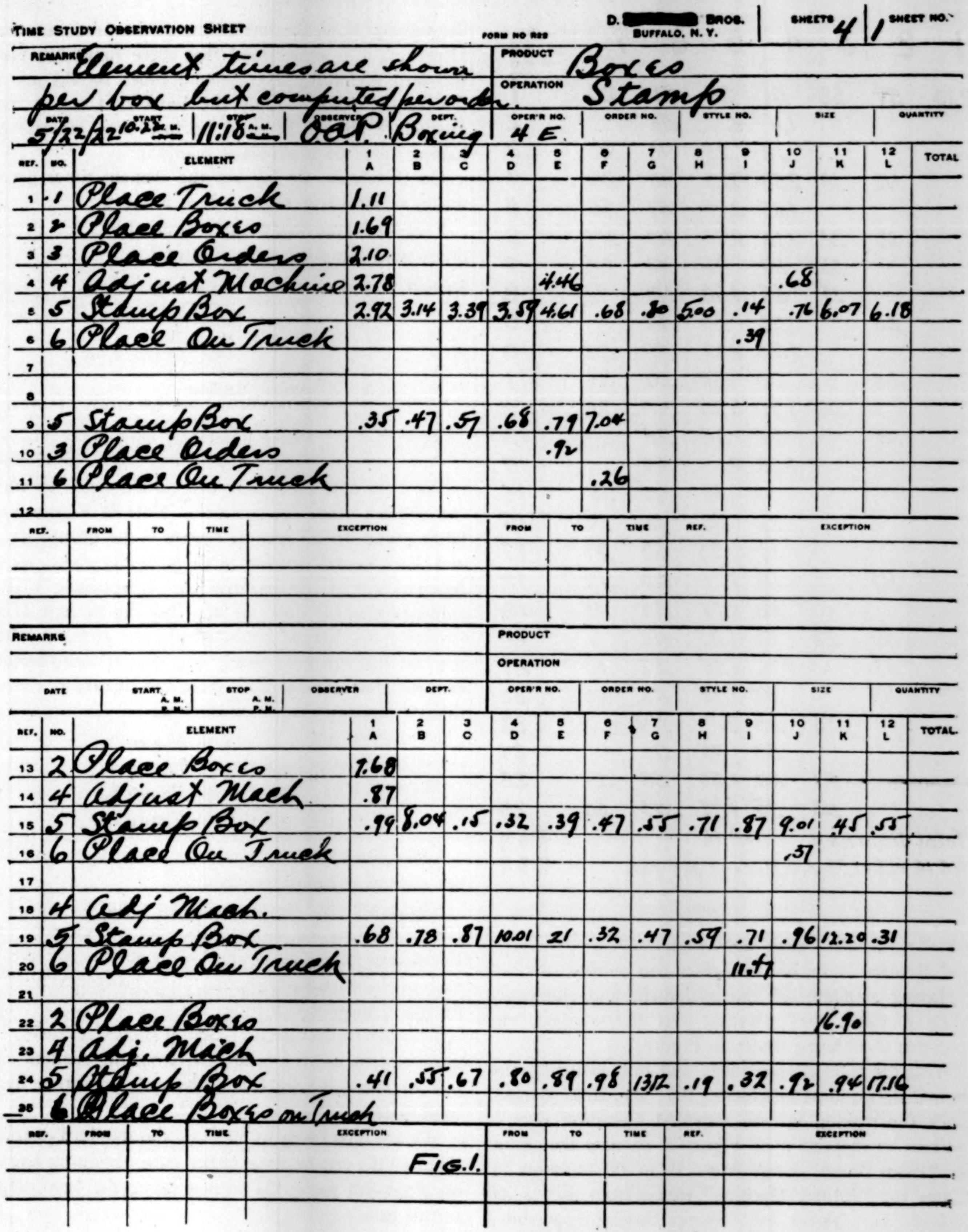
[1] President The Parmenter Engineering Co., Buffalo.



TIME STUDY OBSERVATION SHEET FORM NO R29

D. [redacted] BROS. BUFFALO, N. Y.

SHEETS 4 | 1 SHEET NO.

REMARKS Element times are shown per box but computed per order.

PRODUCT Boxes

OPERATION Stamp

DATE	START A. M. P. M.	STOP A. M. P. M.	OBSERVER	DEPT.	OPER'R NO.	ORDER NO.	STYLE NO.	SIZE	QUANTITY
5/22/22	10.22	11:18	O.A.P.	Boxing	4 E				

REF.	NO.	ELEMENT	1 A	2 B	3 C	4 D	5 E	6 F	7 G	8 H	9 I	10 J	11 K	12 L	TOTAL
1	1	Place Truck	1.11												
2	2	Place Boxes	1.69												
3	3	Place Orders	2.10												
4	4	Adjust Machine	2.78				4.46					.68			
5	5	Stamp Box	2.92	3.14	3.39	3.59	4.61	.68	.80	5.00	.14	.76	6.07	6.18	
6	6	Place On Truck									.39				
7															
8															
9	5	Stamp Box	.35	.47	.57	.68	.79	7.04							
10	3	Place Orders					.92								
11	6	Place On Truck						.26							
12															

REF.	FROM	TO	TIME	EXCEPTION	FROM	TO	TIME	REF.	EXCEPTION

REMARKS

PRODUCT

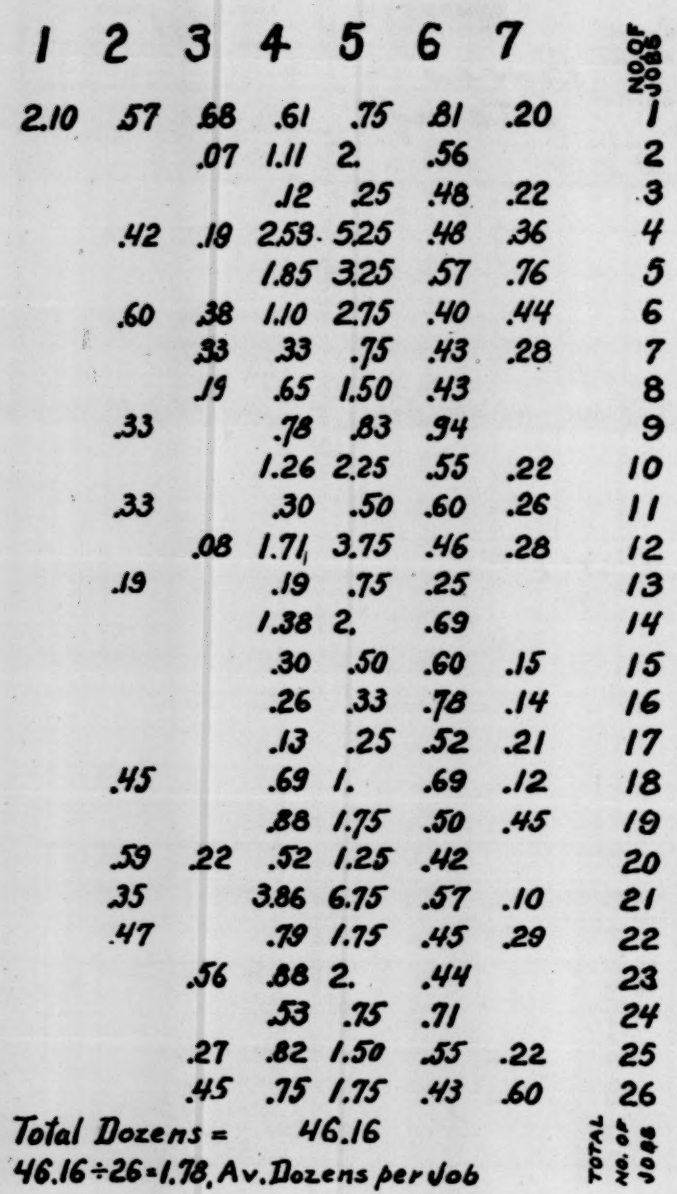
OPERATION

DATE	START A. M. P. M.	STOP A. M. P. M.	OBSERVER	DEPT.	OPER'R NO.	ORDER NO.	STYLE NO.	SIZE	QUANTITY

REF.	NO.	ELEMENT	1 A	2 B	3 C	4 D	5 E	6 F	7 G	8 H	9 I	10 J	11 K	12 L	TOTAL.
13	2	Place Boxes	7.68												
14	4	Adjust Mach	.87												
15	5	Stamp Box	.99	8.04	.15	.32	.39	.47	.55	.71	.87	9.01	.45	.55	
16	6	Place On Truck										.57			
17															
18	4	Adj Mach.													
19	5	Stamp Box	.68	.78	.87	10.01	21	.32	.47	.59	.71	.96	12.20	.31	
20	6	Place On Truck									11.47				
21															
22	2	Place Boxes											16.90		
23	4	Adj. Mach													
24	5	Stamp Box	.41	.55	.67	.80	.89	.98	1312	.19	.32	.92	.94	17.16	
25	6	Place Boxes on Truck													

REF.	FROM	TO	TIME	EXCEPTION	FROM	TO	TIME	REF.	EXCEPTION
				FIG. 1.					

Fig. 1. Time-Study Observation Sheet.



1	2	3	4	5	6	7	No. of Jobs
2.10	.57	.68	.61	.75	.81	.20	1
		.07	1.11	2.	.56		2
			.12	.25	.48	.22	3
	.42	.19	2.53	5.25	.48	.36	4
			1.85	3.25	.57	.76	5
	.60	.38	1.10	2.75	.40	.44	6
		.33	.33	.75	.43	.28	7
		.19	.65	1.50	.43		8
	.33		.78	.83	.94		9
			1.26	2.25	.55	.22	10
	.33		.30	.50	.60	.26	11
		.08	1.71	3.75	.46	.28	12
	.19		.19	.75	.25		13
			1.38	2.	.69		14
			.30	.50	.60	.15	15
			.26	.33	.78	.14	16
			.13	.25	.52	.21	17
	.45		.69	1.	.69	.12	18
			.88	1.75	.50	.45	19
	.59	.22	.52	1.25	.42		20
	.35		3.86	6.75	.57	.10	21
	.47		.79	1.75	.45	.29	22
		.56	.88	2.	.44		23
			.53	.75	.71		24
		.27	.82	1.50	.55	.22	25
		.45	.75	1.75	.43	.60	26

Total Dozens = 46.16

46.16÷26=1.78, Av. Dozens per Job

Total No. of Jobs

Fig. 2. Compilation.

3. Trip machine with right foot.
4. Replace lid on box and place box on pile.

Having standardized the equipment and eliminated waste motions, the operation was time-studied, one specimen sheet being shown in Figure 1.

With the time studies made and our element times computed, we must now select the "standard" element times for making up the standard operation time.

From an inspection of Figure 2 we note that times for "Place Boxes" range from .19 to .60 (column 2). Times for "Adjust Machine" range from .07 to .68 (column 3). Times for "Stamp Boxes" (per doz.) (column 6) range from .25 to .94. We might select the average time, the mean time or the minimum time. However, it is understood that these times are for a standard operator. Exceptional times should not influence the result. Only the times that repeat most frequently should be used because they indicate the habitual acts of a standard operator.

On this basis, we lay out the element times graphically, as shown in Figures 3, 4, 5 and 6.

From the time study observation sheets the element times were compiled, as in Figure 2.

Element No.	Column No.	Element Description
	1	Prepare Equipment
1		(a) Place Truck
3		(b) Place Orders
2	2	Place Boxes
4	3	Adjust Machine
	4	Stamp Boxes (per job card)
	5	Dozens (per job card)
5	6	Stamp Boxes (per doz.)
6	7	Place Stamped Boxes (per trip to truck)

We now note that there are certain fields in which the element times are grouped. Note in Figure 5 the large group at .57 and in Figure 6 the groups at .22 and .28. In determining what is legally right, we accept the will of the majority. In determining what is standard element time, we can find the average of the majority of element times which are grouped within the smallest range of time. For setting these selected element times (majority) from the discarded element times (minority) we draw the lines—

AB and CD in Figure 3a
EF and GH in Figure 4a
IJ and KL in Figure 5a
MN and OP in Figure 6a

These lines show the majority of elements ranged in the zone of greatest frequency.

These are the majority of the elements that most closely combine for showing the standard element time. For determining the standard element time, we average each of these majority groups. The horizontal lines are drawn to show which times are used.

In order to do this for "Stamp Boxes" element, it is necessary to use the total time from the element compilation sheet, Figure 2, and divide the total time by the total dozens.

We are now ready to make up the standard operation time. (This can be done either on a per-dozen basis or on a per-job basis, the former being the best adapted to this case.)

(Concluded on page 124)

ELEMENT SELECTION

OPERATION — STAMP BOXES

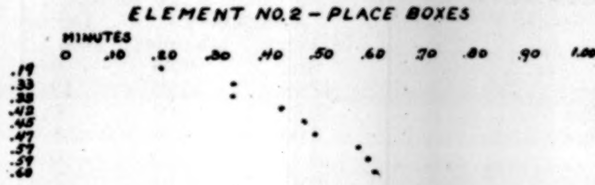


Fig. 3

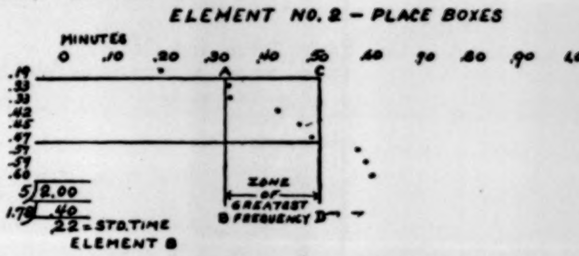


Fig. 3a

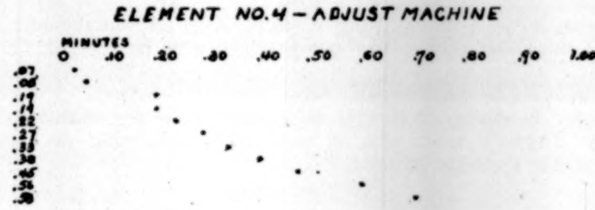


Fig. 4

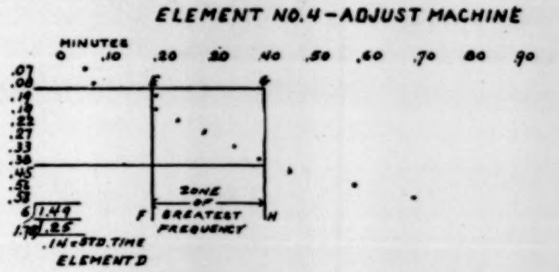


Fig. 4a

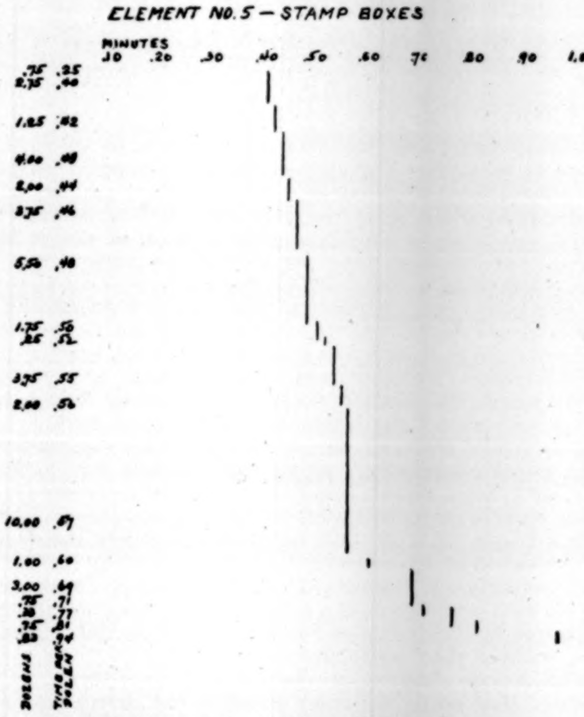


Fig. 5

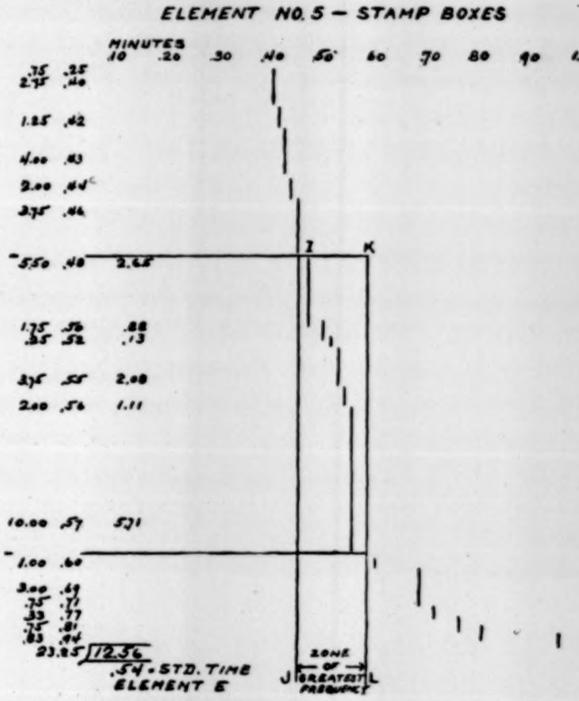


Fig. 5a

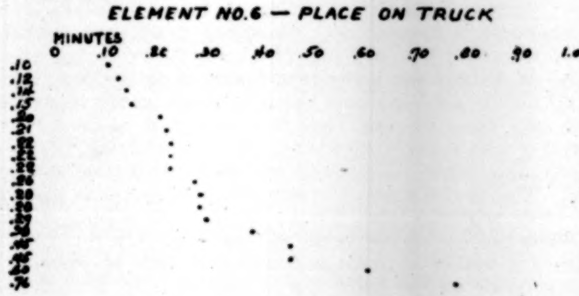


Fig. 6

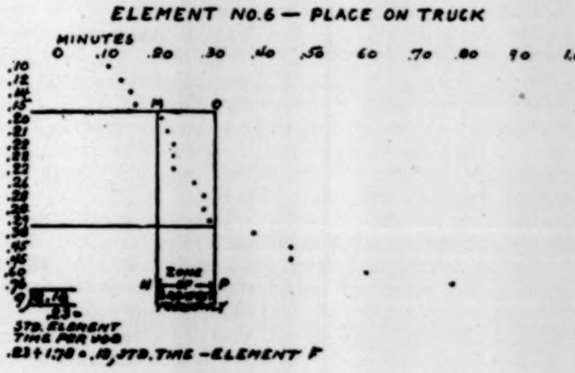


Fig. 6a

Figs. 3 to 6 and 3a to 6a. Computing Standard Times